



WATER FORWARD
INTEGRATED WATER RESOURCE PLAN

Austin Integrated Water Resource Planning Community Task Force

Packet Index

January 31, 2017

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Backup – Key Dates for Options Screening	
Backup – Preliminary Disaggregated Demand Model Results Summary Table (in acre feet and gallons)	
Backup – Draft regional demands table	
Backup - Draft List of 25 Demand Management Options with applicable sectors and end uses	



Austin Integrated Water Resource Planning Community Task Force
January 31, 2017 – 10:00 a.m.
Waller Creek Center, Conference Room 900 Large
625 East 10th Street
Austin, Texas 78701

For more information go to:
[Austin Integrated Water Resource Planning Community Task Force](#)

AGENDA

Voting Members:

Sharlene Leurig - Chair	Marianne Dwight	Sarah Richards
Jennifer Walker – Vice Chair	Diane Kennedy	Lauren Ross
Todd Bartee	Perry Lorenz	Kate Zerrenner
Clint Dawson	Bill Moriarty	

Ex Officio Non-Voting Members:

Austin Water: Greg Meszaros
Austin Energy: Kathleen Garrett
Austin Resource Recovery: Sam Angoori
Neighborhood Housing and Community Development: Rebecca Giello
Office of Innovation: Kerry O'Connor
Office of Sustainability: Lucia Athens
Parks and Recreation: Sara Hensley
Watershed Protection: Mike Personett

1. CALL TO ORDER – January 31, 2017, 10:00 a.m.

2. CITIZEN COMMUNICATION

The first 10 speakers signed up prior to the meeting being called to order will each be allowed a three-minute allotment to address their concerns regarding items not posted on the agenda.

3. APPROVAL OF MEETING MINUTES

- a. Approval of the meeting minutes from the January 17, 2017 Task Force meeting (5 minutes)

4. STAFF BRIEFINGS, PRESENTATIONS, AND OR REPORTS

- a. Water Demand Projections Overview, Including Disaggregated Demand Model Follow-Up – City Staff (90 minutes)
 - i. Task Force Discussion and Input
- b. Process Overview Follow Up – City Staff (15 minutes)
 - i. Task Force Discussion and Input

5. SUBCOMMITTEE REPORTS

6. VOTING ITEMS FROM TASK FORCE

7. FUTURE AGENDA ITEMS

8. ADJOURN

Note: Agenda item sequence and time durations noted above are subject to change.

The City of Austin is committed to compliance with the American with Disabilities Act. Reasonable modifications and equal access to communications will be provided upon request. Meeting locations are planned with wheelchair access. If requiring Sign Language Interpreters or alternative formats, please give notice at least 2 days (48 hours) before the meeting date. Please call Austin Integrated Water Resource Planning Community Task Force, at 512-972-0194, for additional information; TTY users route through Relay Texas at 711.

For more information on the Austin Integrated Water Resource Planning Community Task Force, please contact Marisa Flores Gonzalez at 512-972-0194.

MINUTES



The *Austin Integrated Water Resource Planning Community Task Force* convened in a regular meeting on January 17, 2017 at One Texas Center, Rm 325, 505 Barton Springs Road, in Austin, Texas.

Members in Attendance:

Sharlene Leurig - Chair	Marianne Dwight	Lauren Ross
Jennifer Walker – Vice Chair	Perry Lorenz	
Todd Bartee	Bill Moriarty	

Ex-Officio Members in Attendance:

Kathleen Garrett, Lucia Athens, Mike Personett

Staff in Attendance:

Kevin Critendon, Teresa Lutes, Daryl Slusher, Joe Smith, Marisa Flores Gonzalez, Mark Jordan, Jadell Hines, Ginny Guerrero, Prachi Patel, Katherine Jashinski

Additional Attendees:

John Burke, Doug Rigoon, David Venhuizen, Brent Lyles, Ron Anderson, Abel Porras, Russell Fraser

1. CALL TO ORDER

Sharlene Leurig, Chair, called the meeting to order at 6:15p.m.

2. CITIZEN COMMUNICATION: GENERAL

Brent Lyles of the Colorado River Alliance spoke on public outreach efforts for the plan and offered his organization’s assistance in those efforts.

3. APPROVAL OF MEETING MINUTES

The meeting minutes from the December 13, 2016 Austin Integrated Water Resource Planning Community Task Force regular meeting were approved on Member Moriarty’s motion and Vice Chair Walker’s second on a 4-0-3-3 vote with Members Dawson, Kennedy, and Richards absent.

4. STAFF BRIEFINGS, PRESENTATIONS, AND/OR REPORTS

- a. Update on Public Outreach Efforts was provided by the Lynda Rife, Consultant with Rifeline. This presentation was followed by Task Force discussion and input.
- b. Demand Management and Supply Side Options Update was provided by Teresa Lutes, Managing Engineer, Austin Water. This presentation was followed by Task Force discussion and input.
- c. Disaggregated Demand Model Follow-Up presentation was postponed until the January 31, 2017 special called Task Force meeting.

5. SUBCOMMITTEE REPORTS

None

6. VOTING ITEMS FROM TASK FORCE

None

10. FUTURE AGENDA ITEMS

None

Chair Leurig adjourned the meeting at 8:39 pm.

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PRESENTATION



Water Forward – Austin's Integrated Water Resource Plan

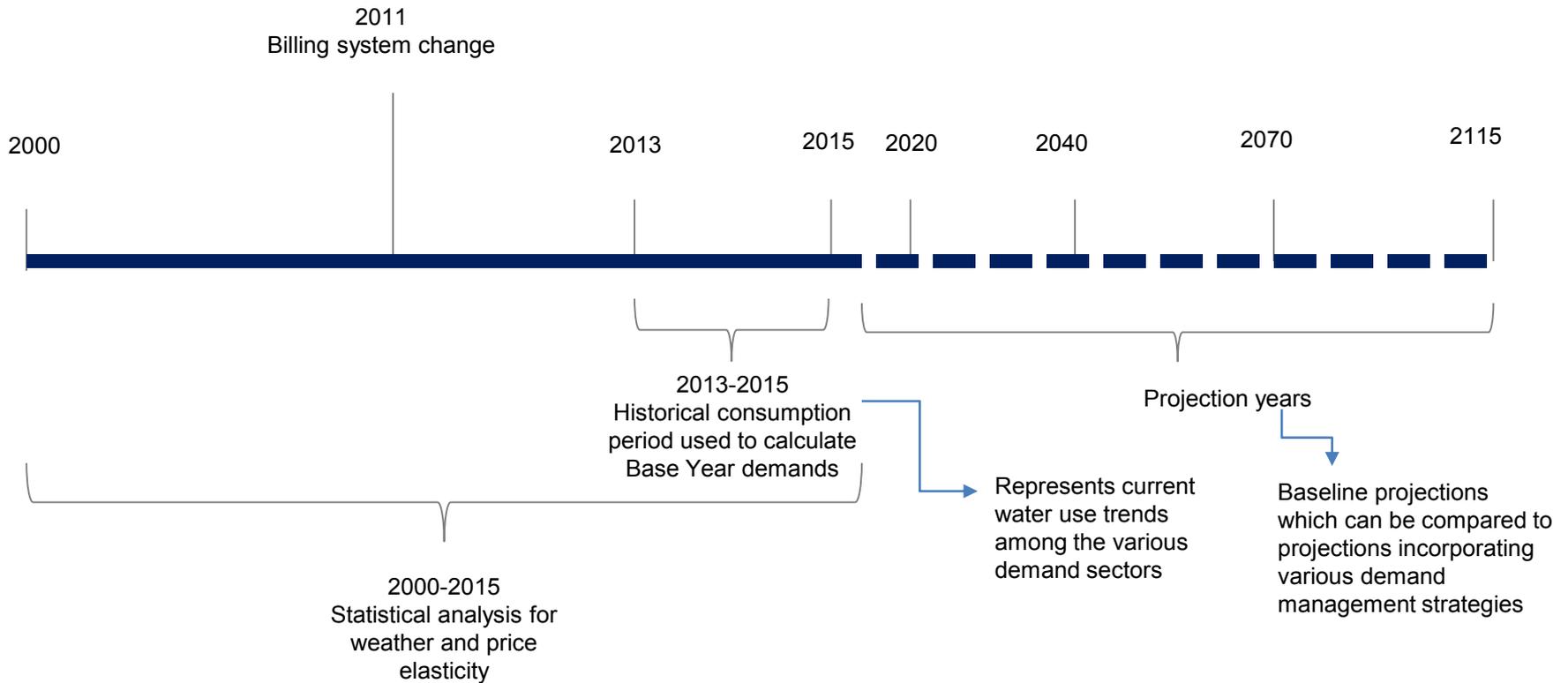
January 31, 2017

Outline

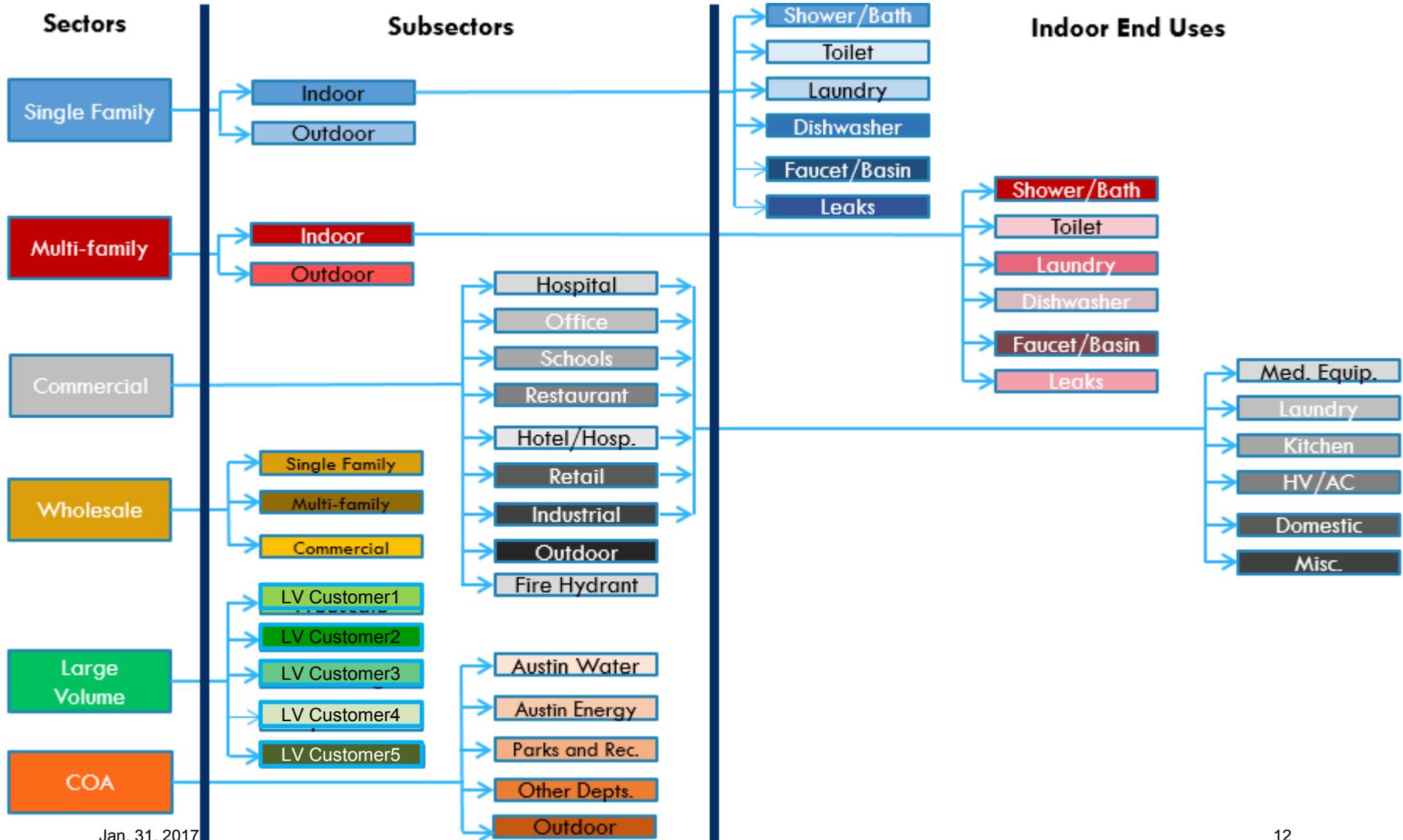
- Development of demand projections
- How will demands be used in the IWRP?
- Results from the model
- Next steps

Development of demand projections

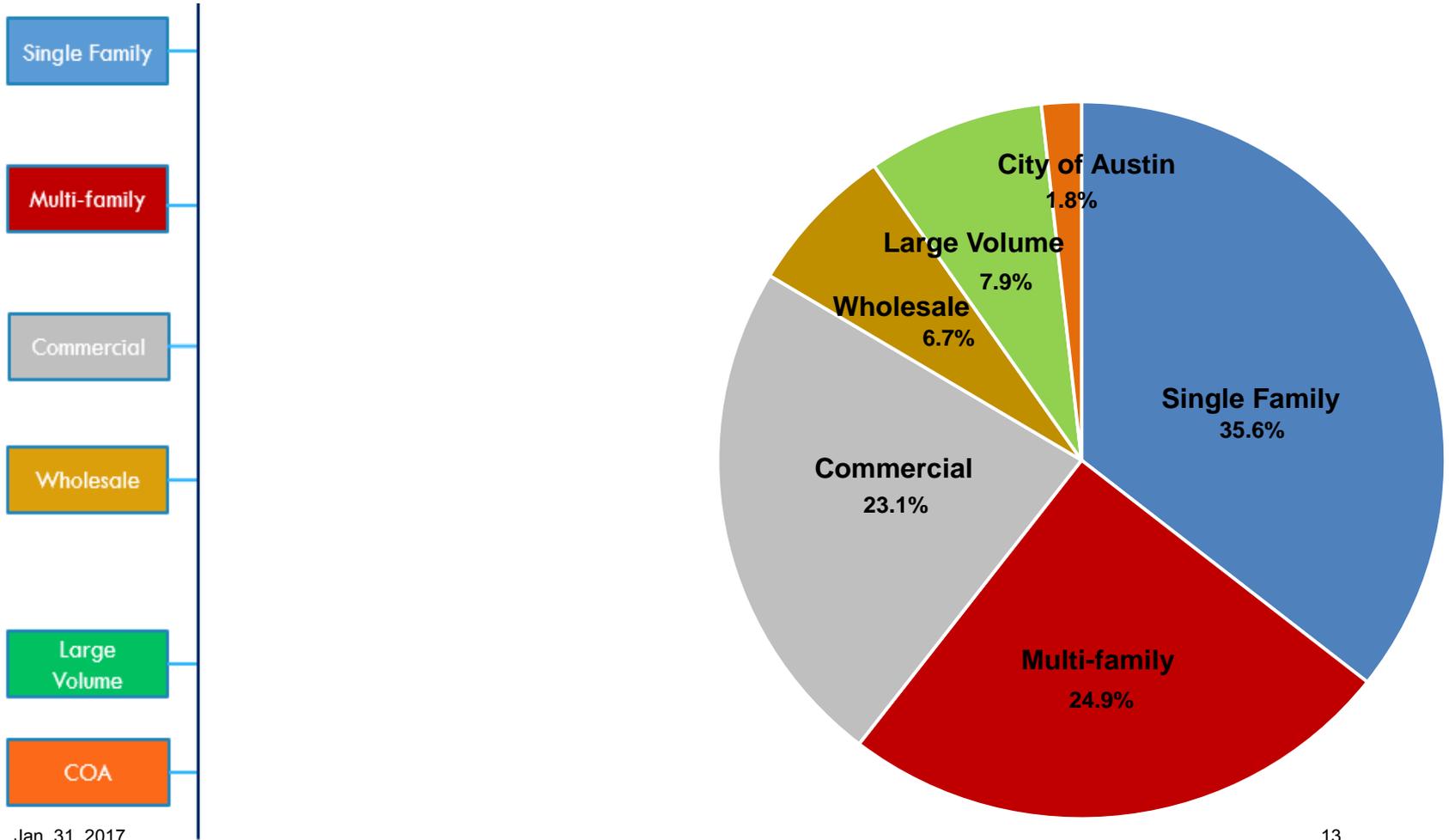
Analysis Timeline



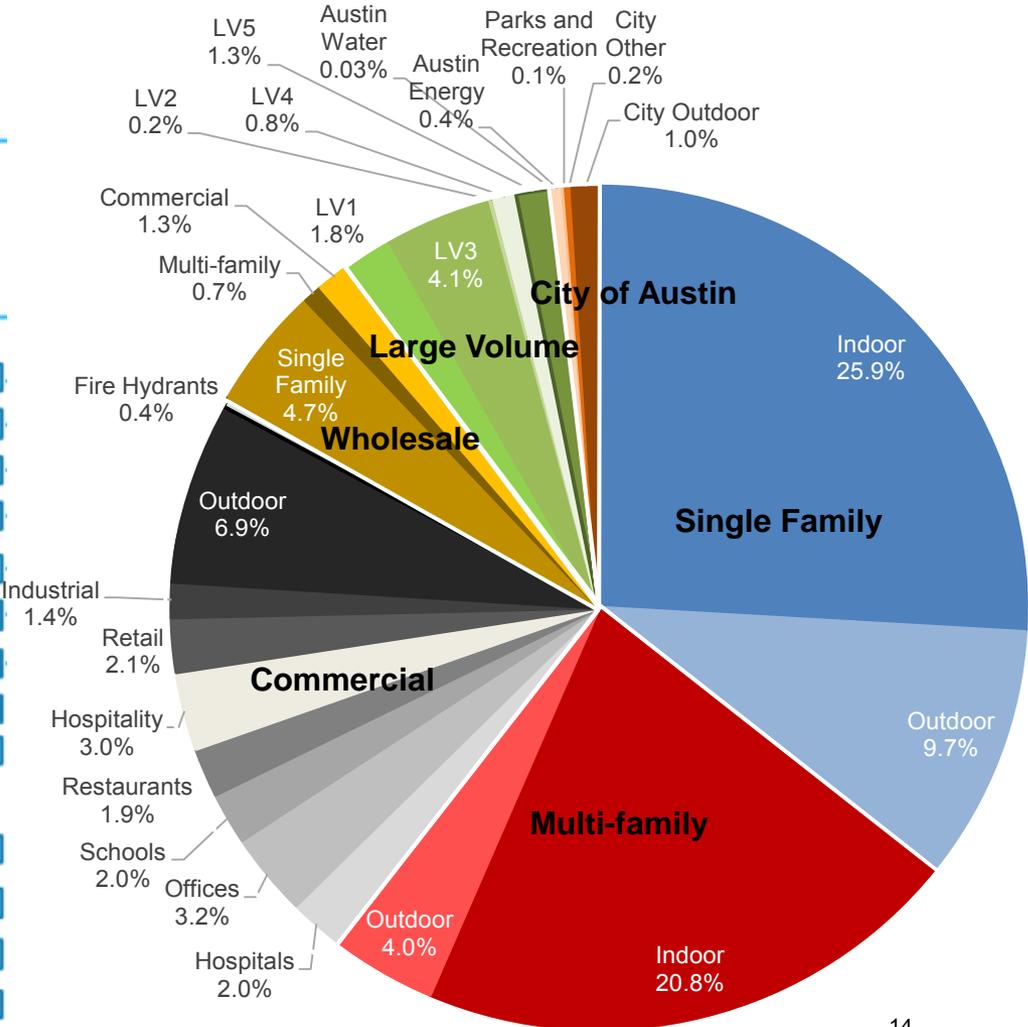
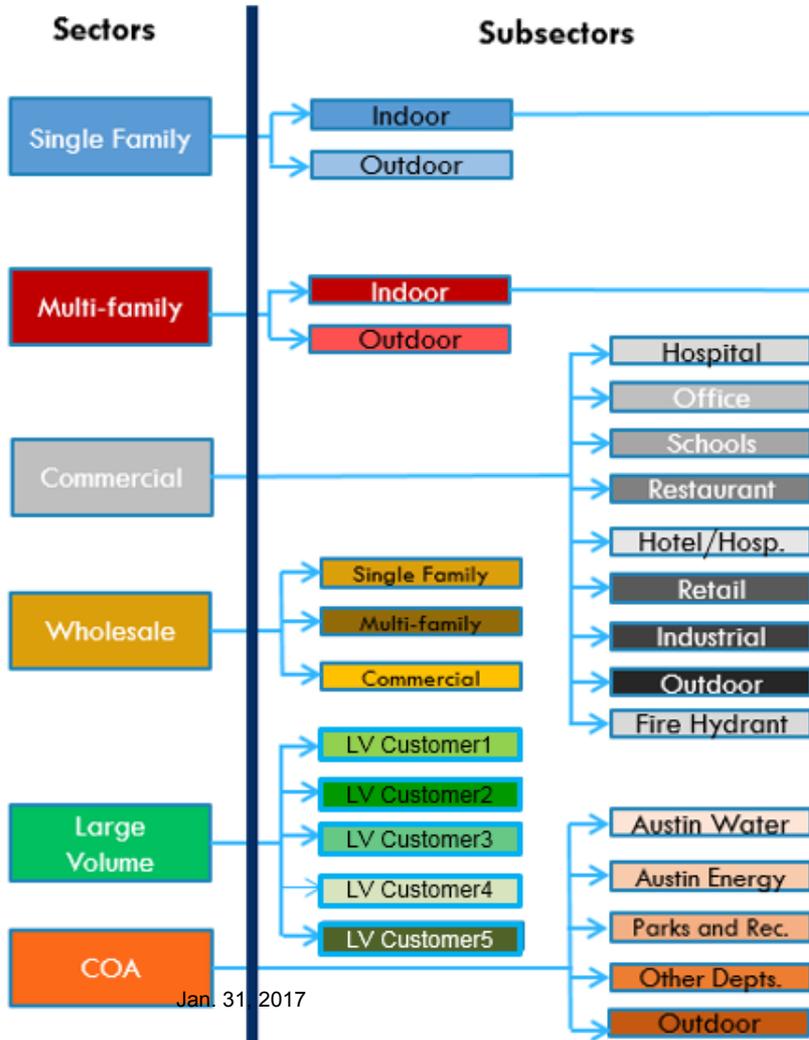
Disaggregation of Customer Data Down to the End User



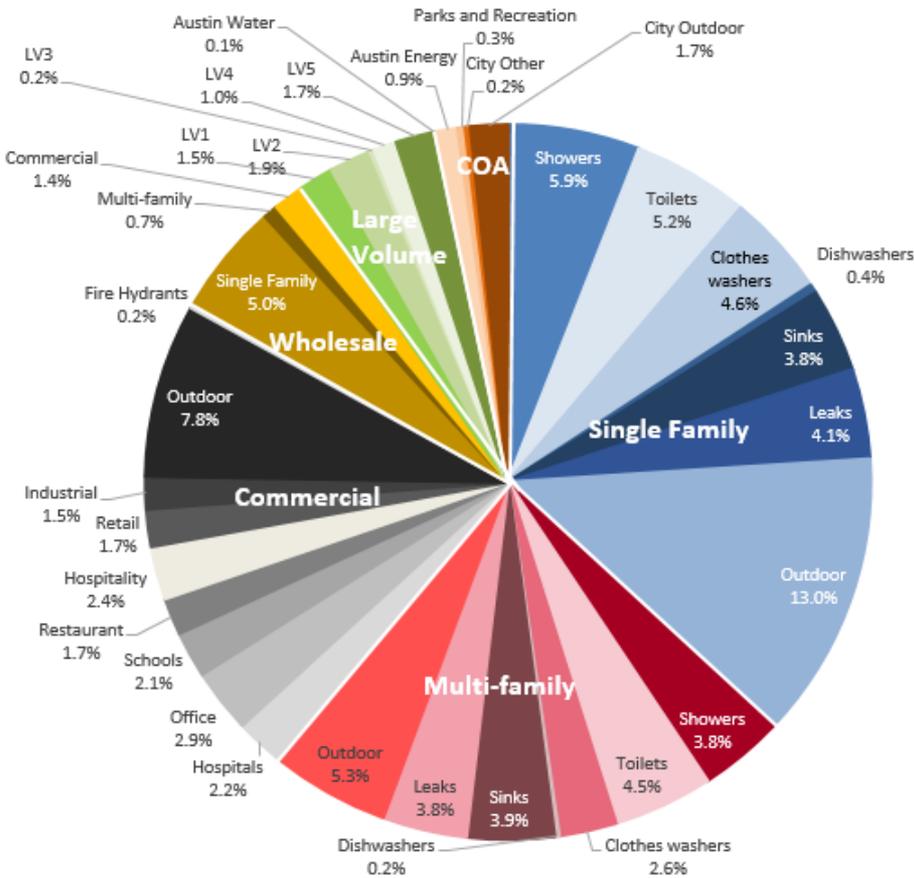
Base Year Consumption Sectors (Averages of 2013-2015)



Base Year Consumption Subsectors (Averages of 2013-2015)

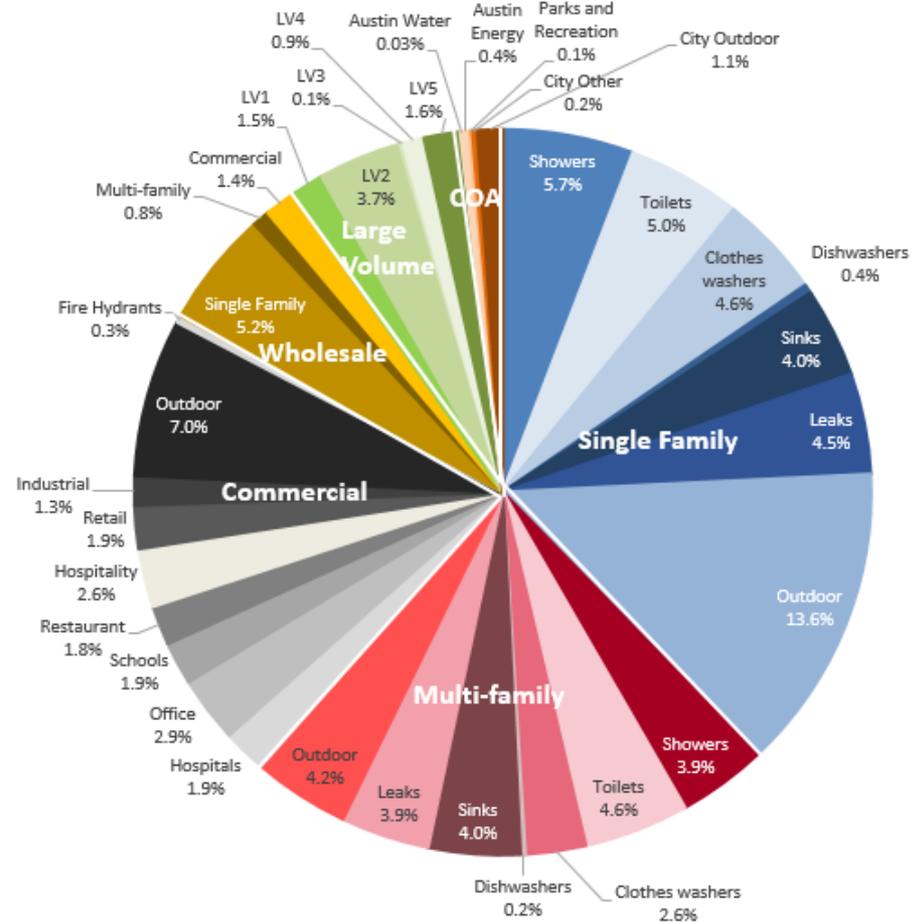


Historical Consumption



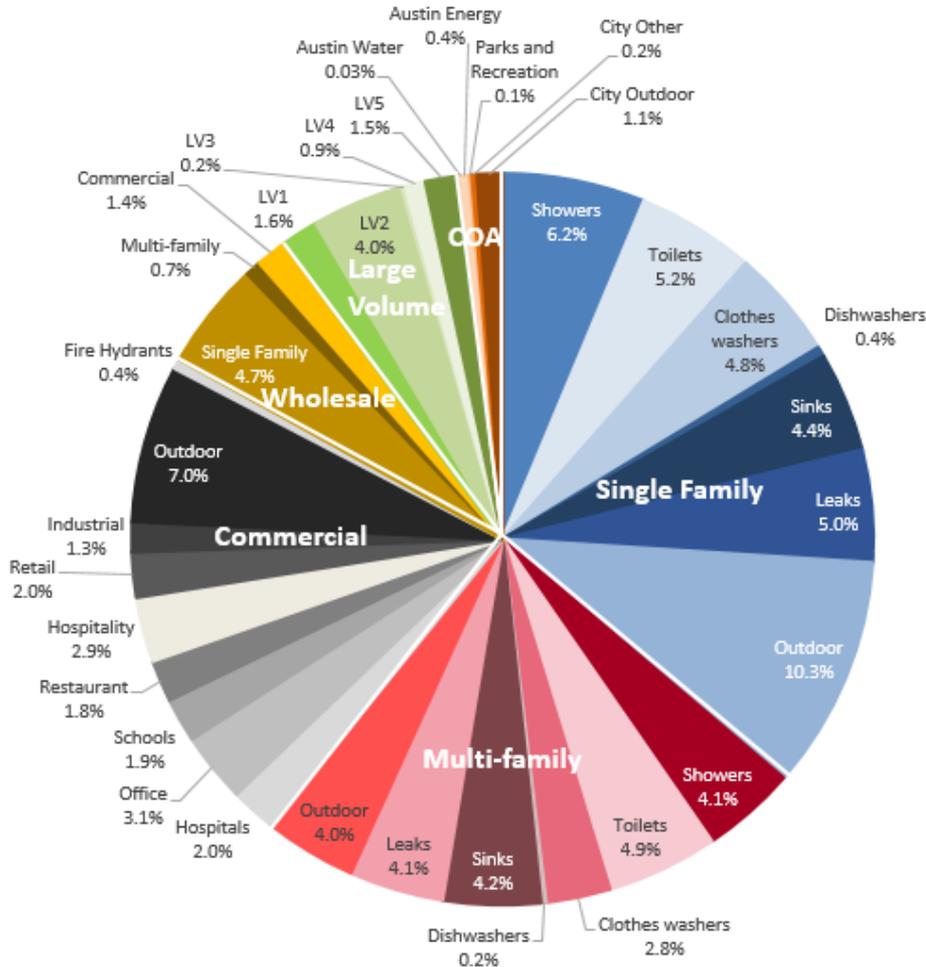
Jan. 31, 2017

2010



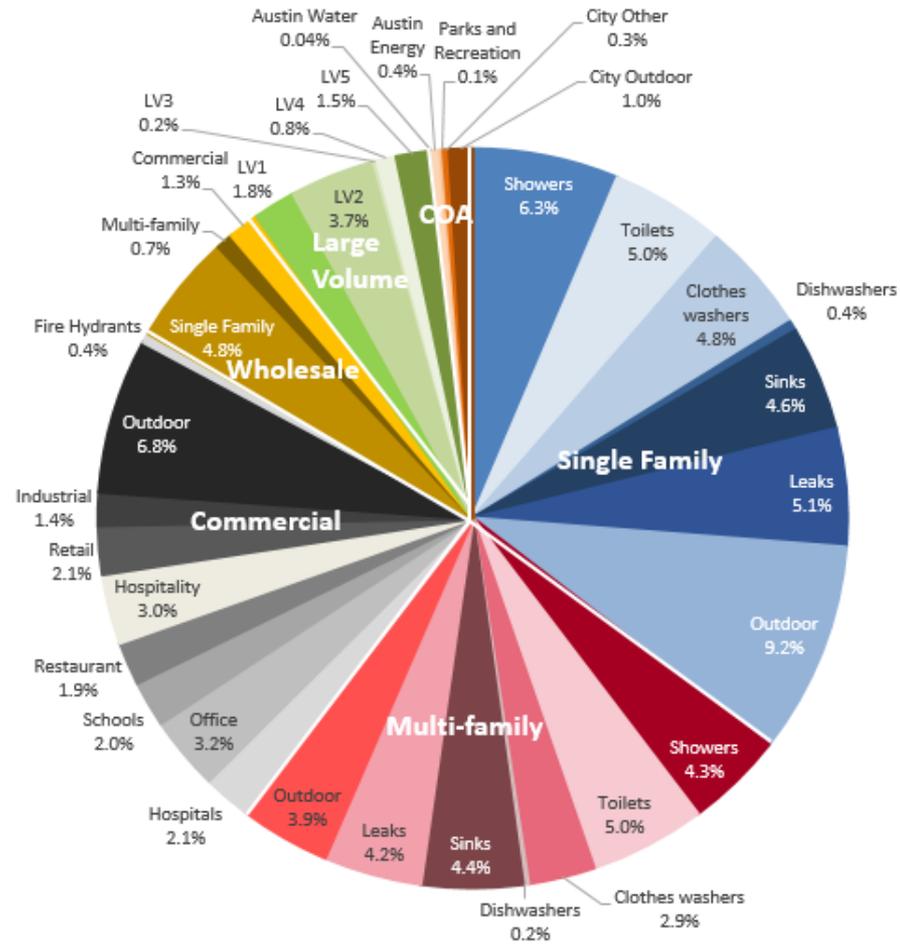
2012

Historical Consumption



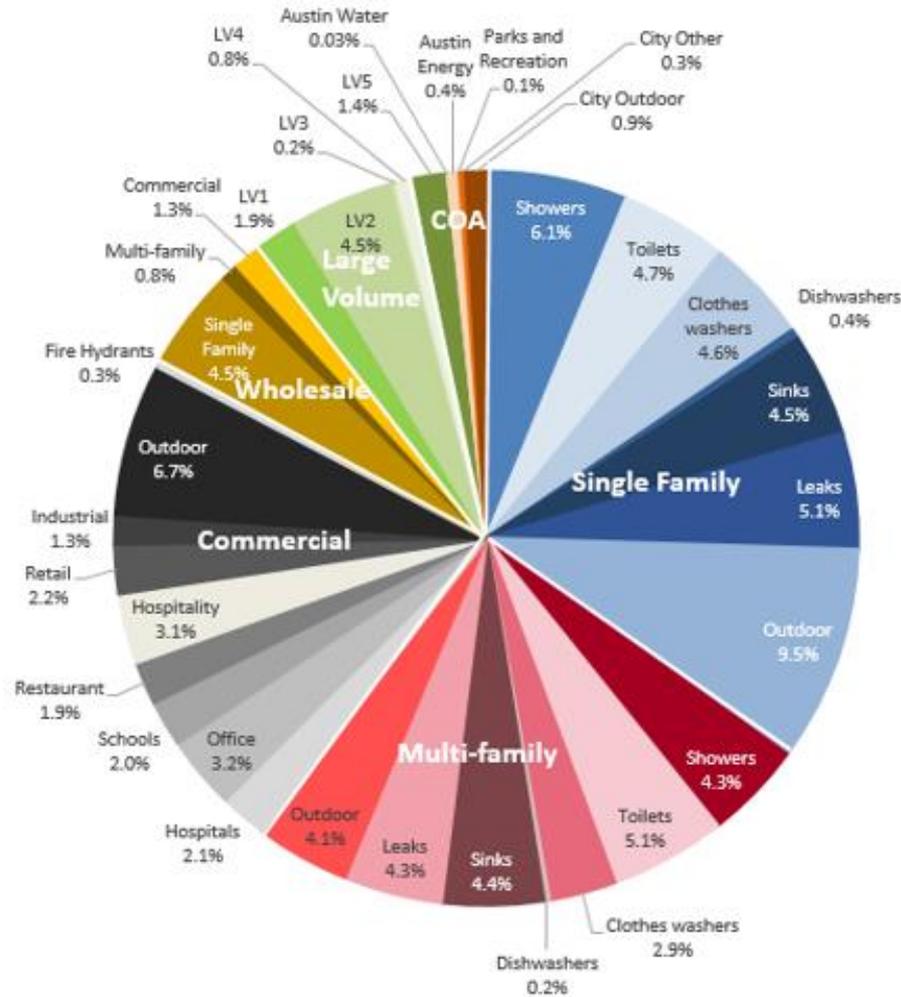
Jan. 31, 2017

2013



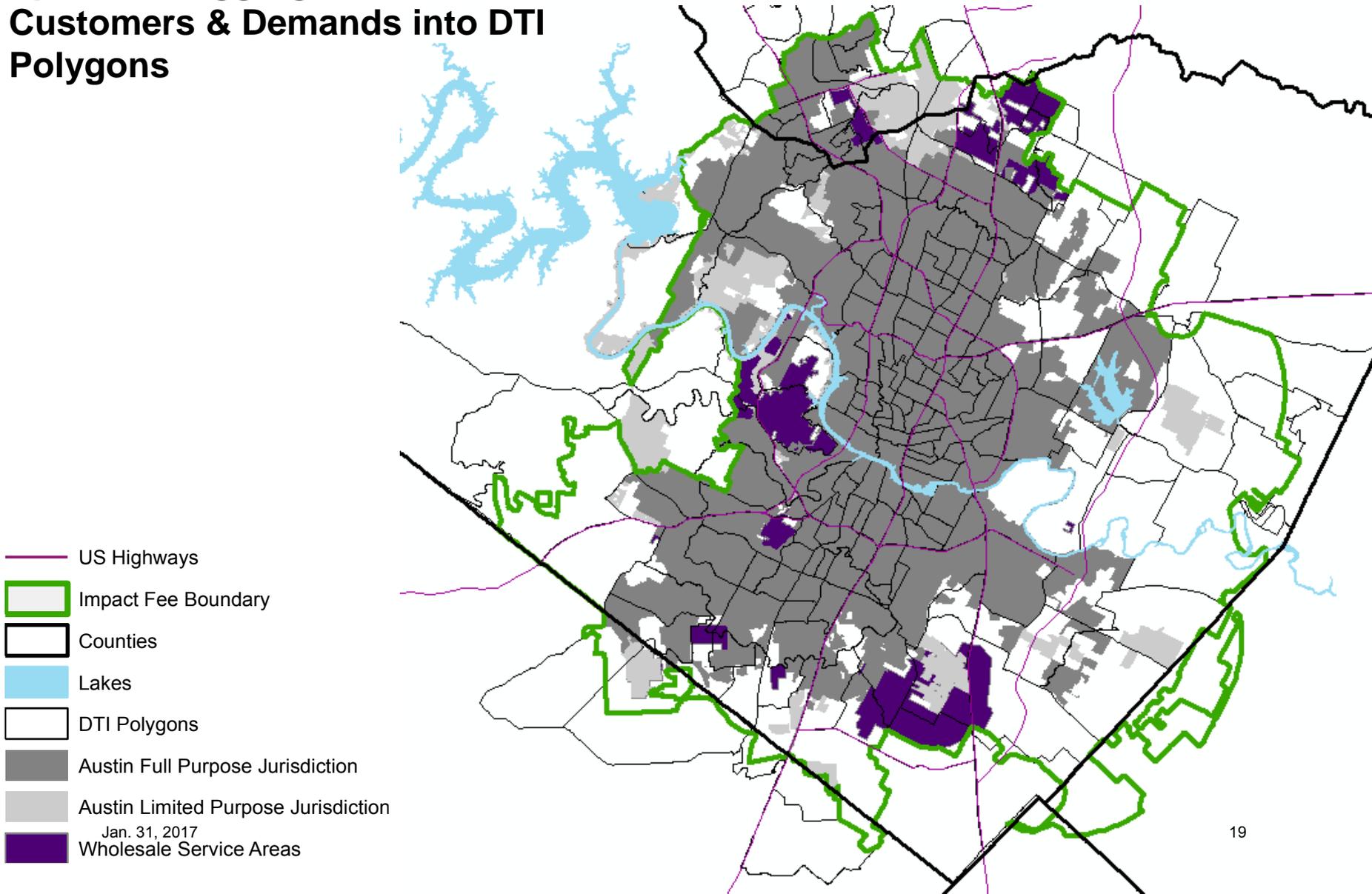
2014

Historical Consumption

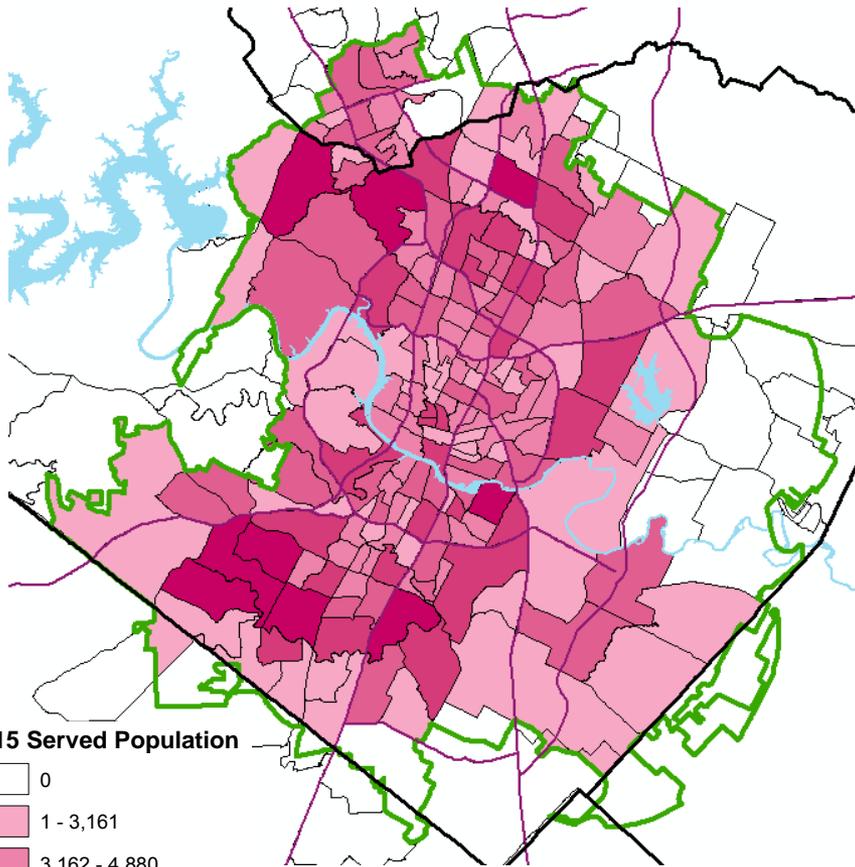


2015

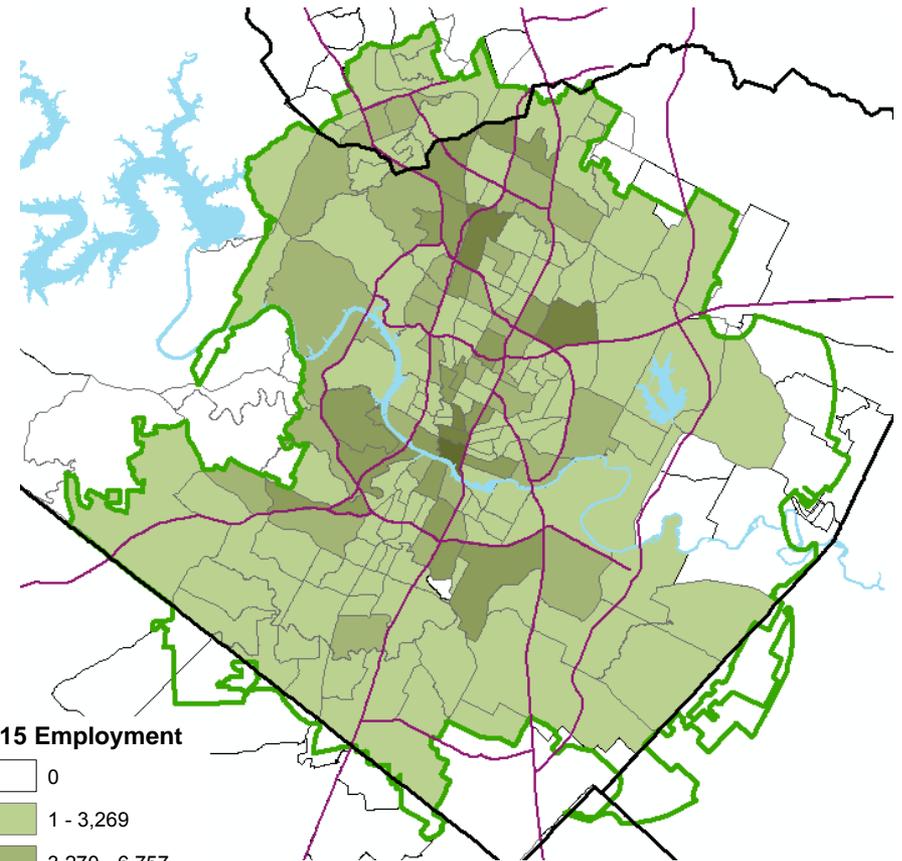
Spatial Disaggregation of Customers & Demands into DTI Polygons



Demographics Used to Calculate Water Use Factors Among Demand Sectors



Served Population Distribution



Employment Distribution



Multifamily



Single Family



Single Family



Multifamily



Multifamily

Units



Population



Employees

Industrial

Office

Hospitals

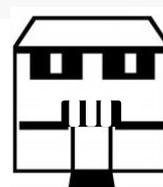
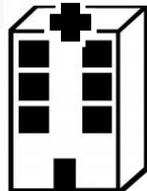
Schools

Hospitality

Retail

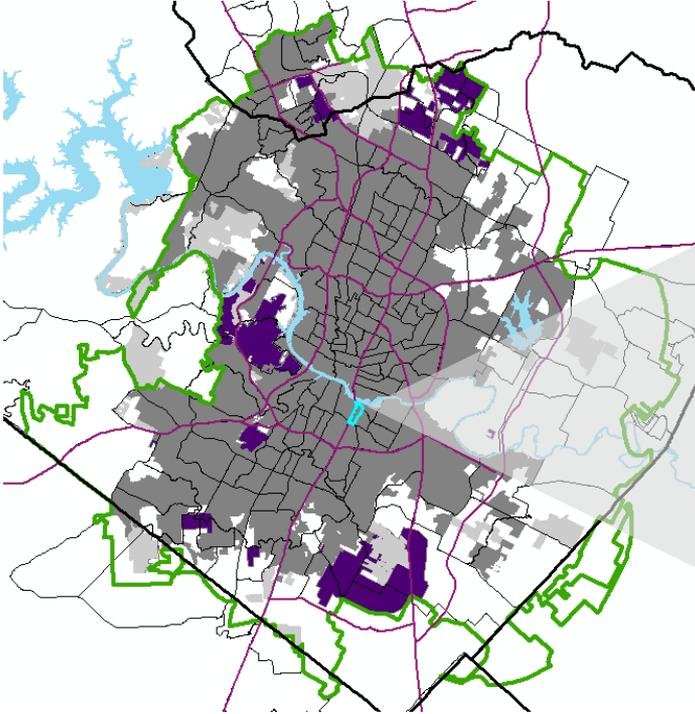
Restaurant

Subsectors



Water Use Factor Development

Eg: DTI polygon 129



-  Commercial
-  Multi-Family Residential
-  Single Family Residential



Water Use Factor (WUF) Calculations



Σ SF Billed Volume

Σ SF Units

Σ MF Billed Volume

Σ MF Units

Σ Industrial Billed Volume

Σ Industrial Employees

Σ Office Billed Volume

Σ of Office Employees

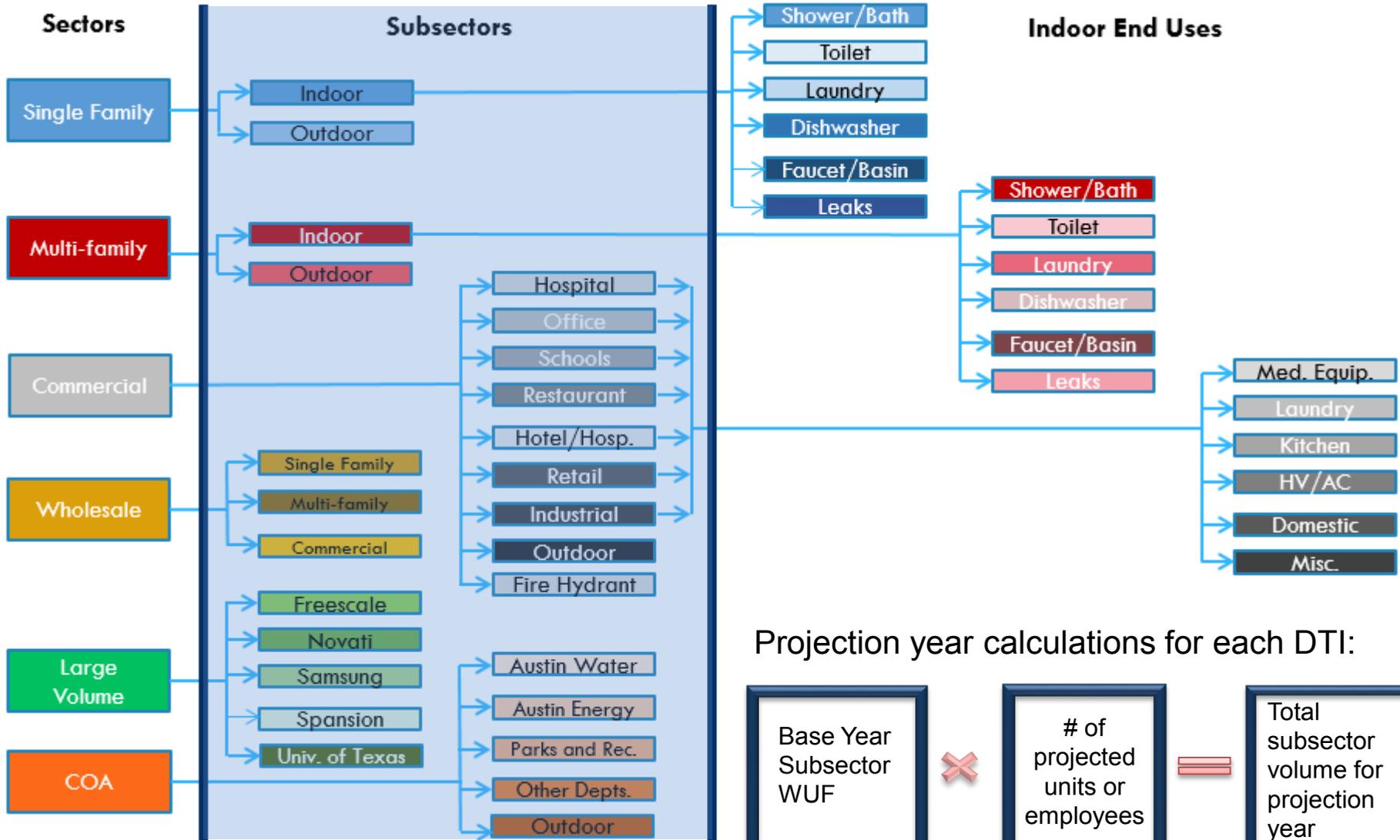
Single Family WUF
(gal/household/year)

Multi-family WUF
(gal/household/year)

Industrial Subsector WUF
(gal/employee/year)

Office Subsector WUF
(gal/employee/year)

Base Year Demand Projections



Projection year calculations for each DTI:

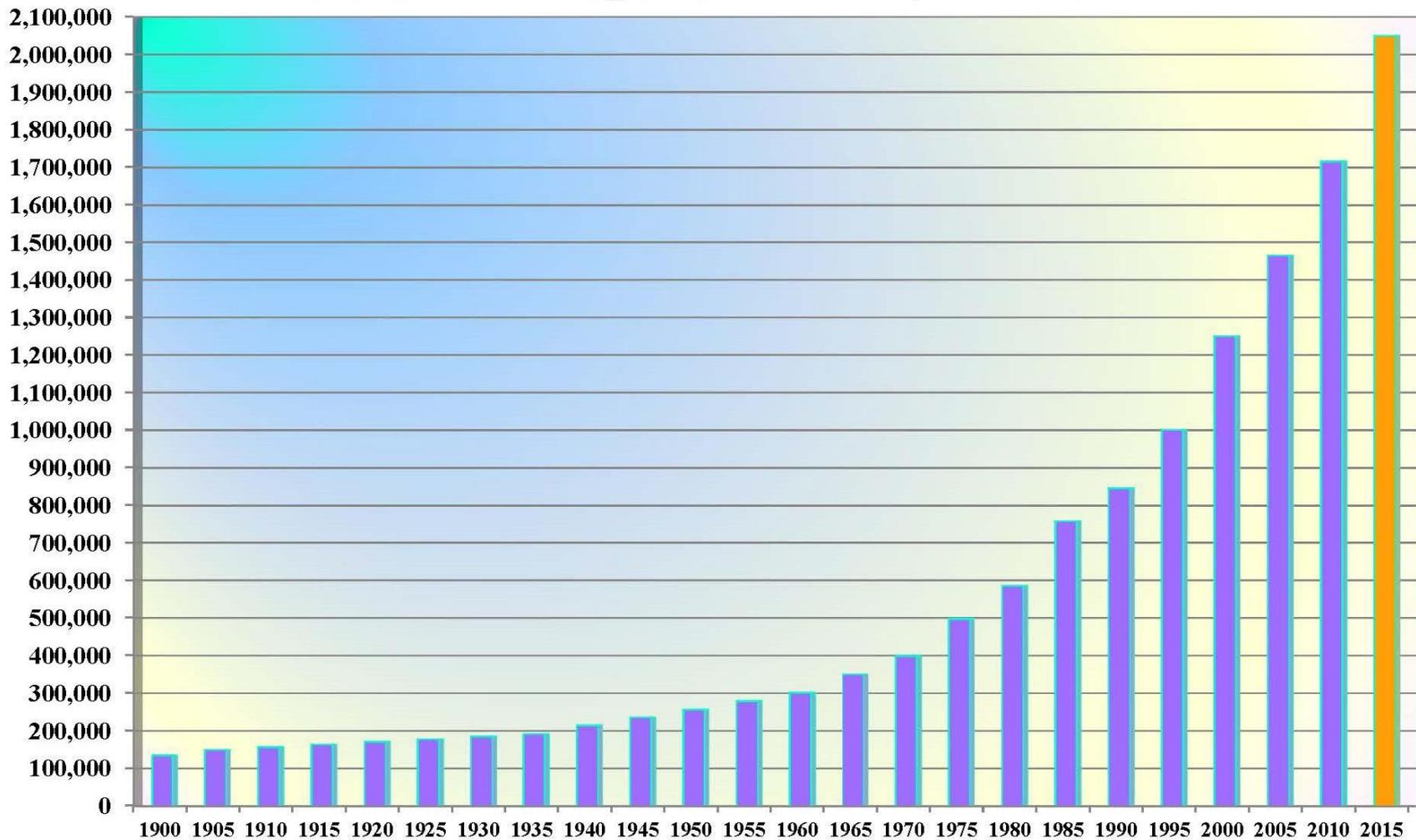
$$\begin{array}{|c|} \hline \text{Base Year} \\ \text{Subsector} \\ \text{WUF} \\ \hline \end{array} \times \begin{array}{|c|} \hline \# \text{ of} \\ \text{projected} \\ \text{units or} \\ \text{employees} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Total} \\ \text{subsector} \\ \text{volume for} \\ \text{projection} \\ \text{year} \\ \hline \end{array}$$

It's Important to Note

Base Year Demand Projections

- Represent current trends in water use among various demand sectors (decreasing outdoor consumption, City Reclaimed conversions, etc.)
- Include passive conservation estimates (water savings due to already codified conservation programs such as low-flow fixture requirements and irrigation system audits)
- Do not include projected reclaimed water use, or any other active demand management strategy (these will be incorporated and evaluated at the portfolio level)

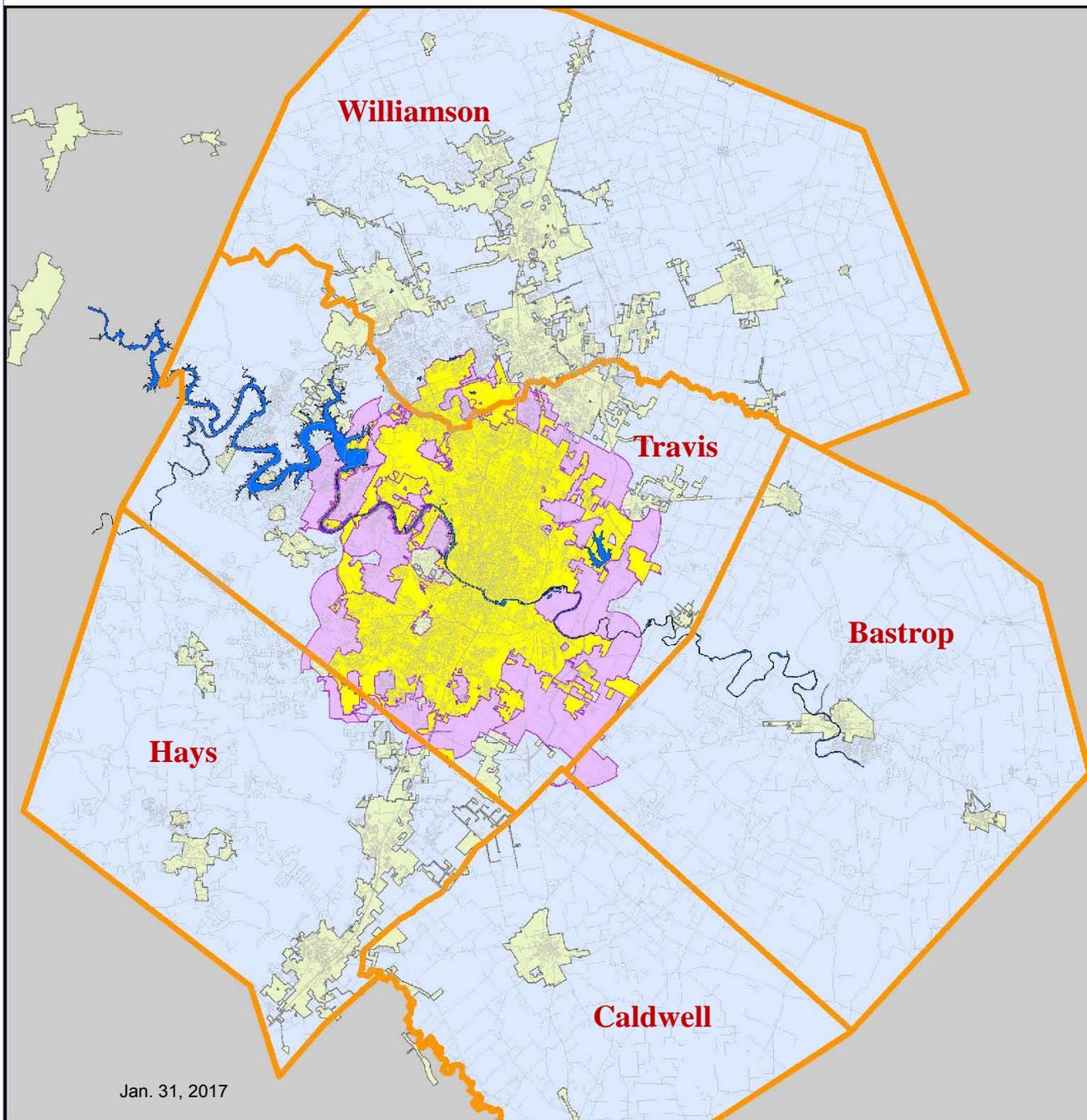
Austin MSA Population History: 1900 to 2015

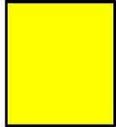


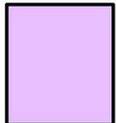
Austin-- Round Rock MSA

Metropolitan Statistical Area

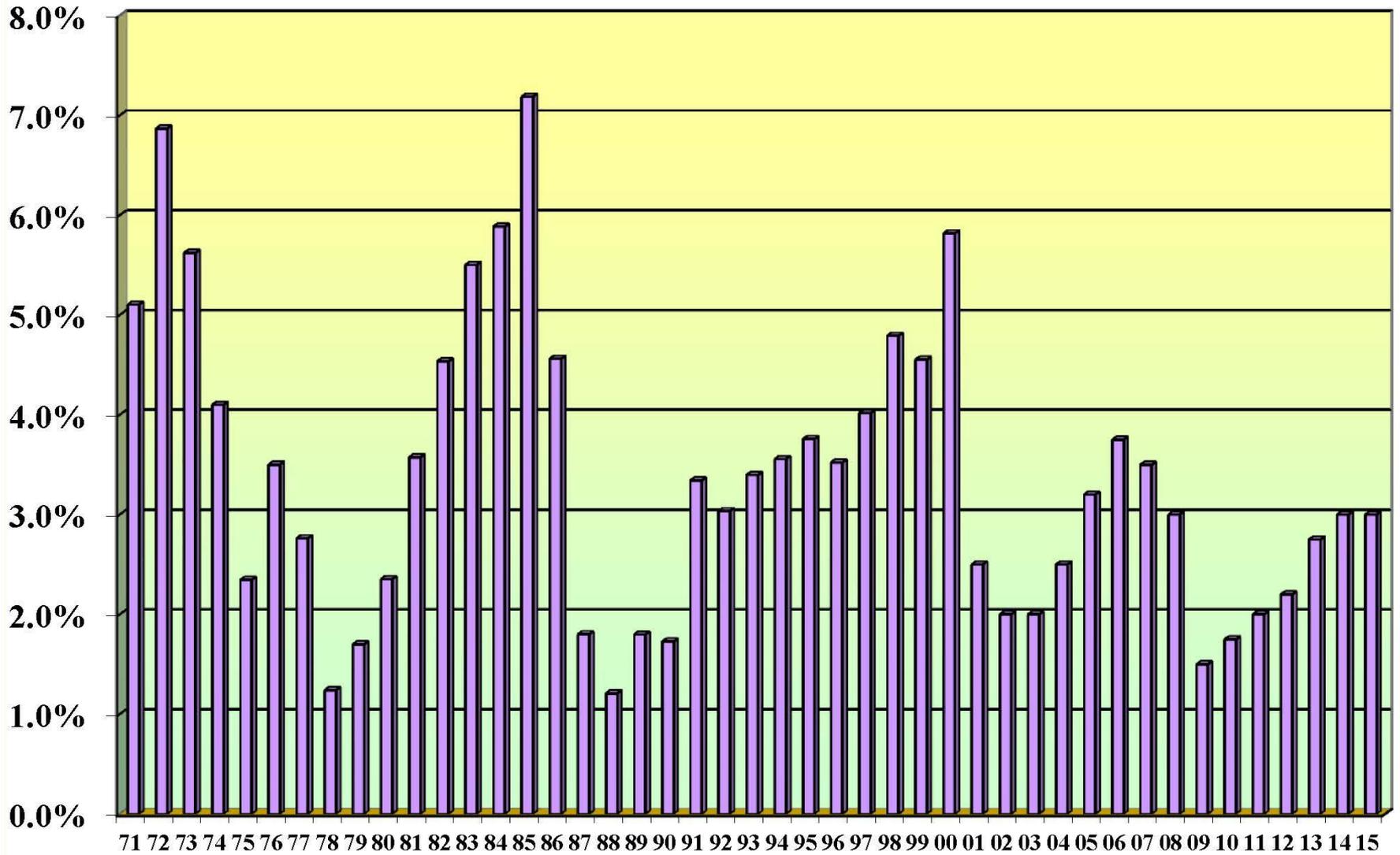
April 2016



 City of Austin
Full and Limited
Jurisdiction

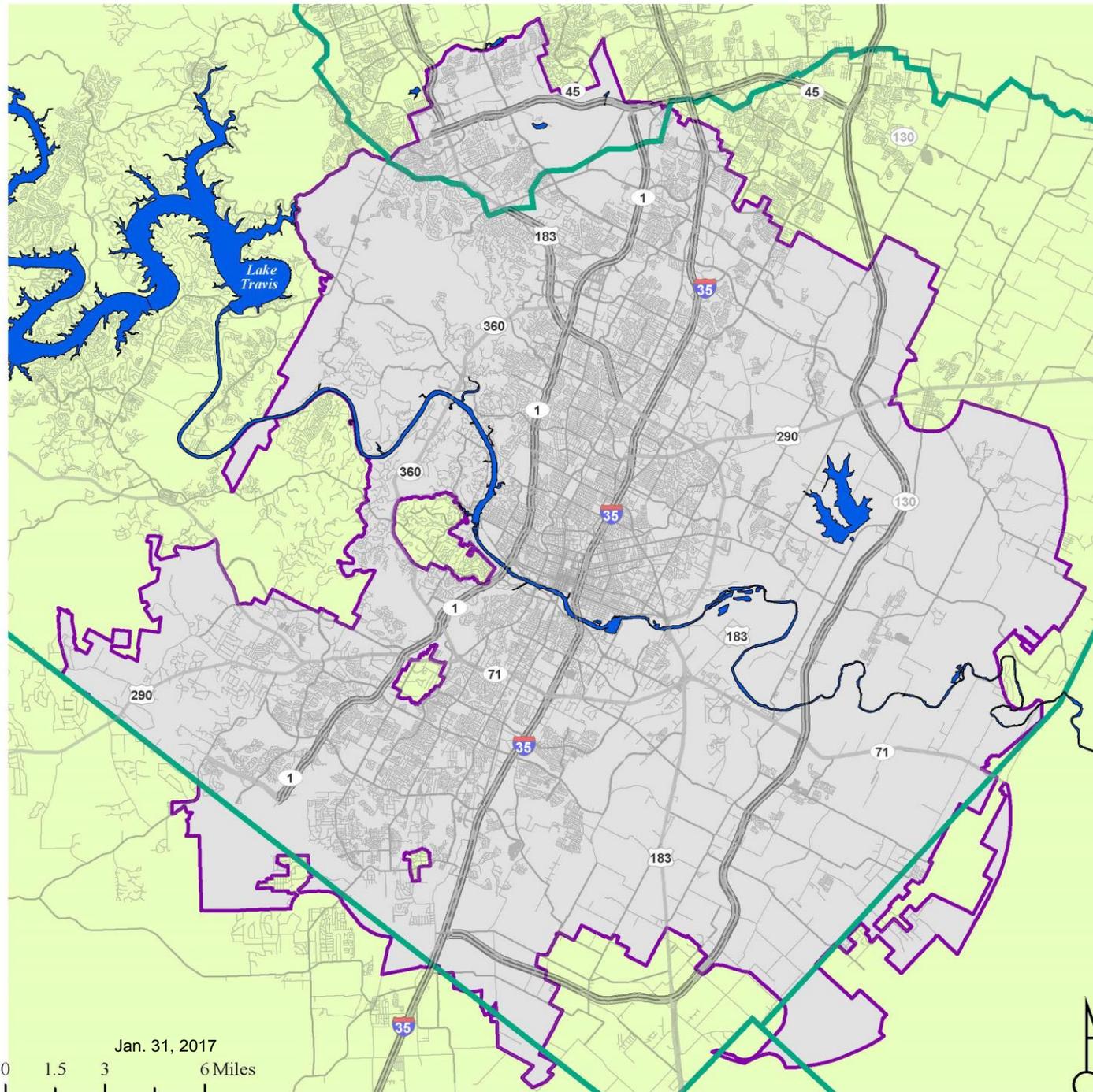
 City of Austin
Extra-Territorial
Jurisdiction

Austin MSA Annual Population Growth Rates: 1970--2015



Austin Water Study Area 2115 Projection

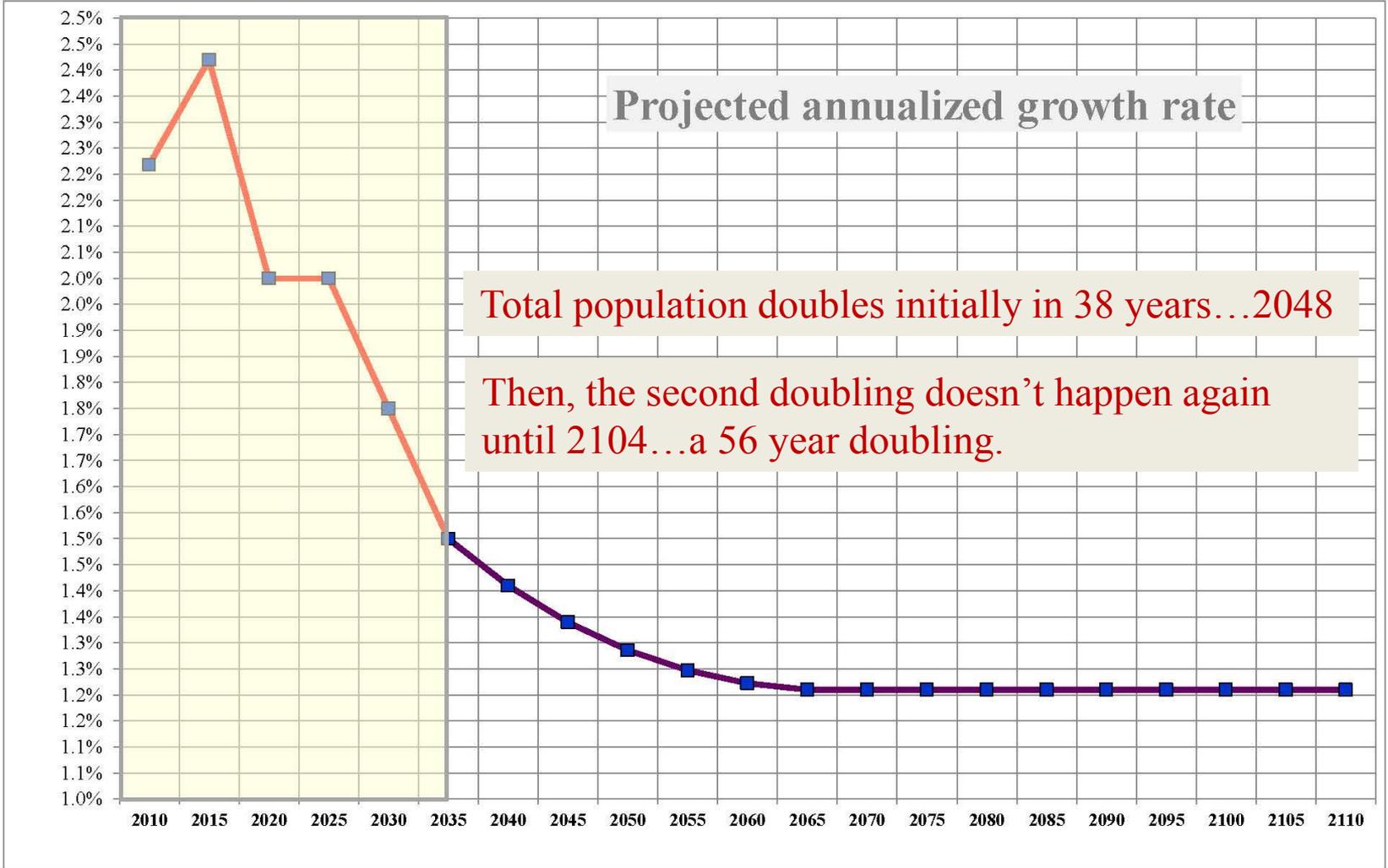
548 Square Miles



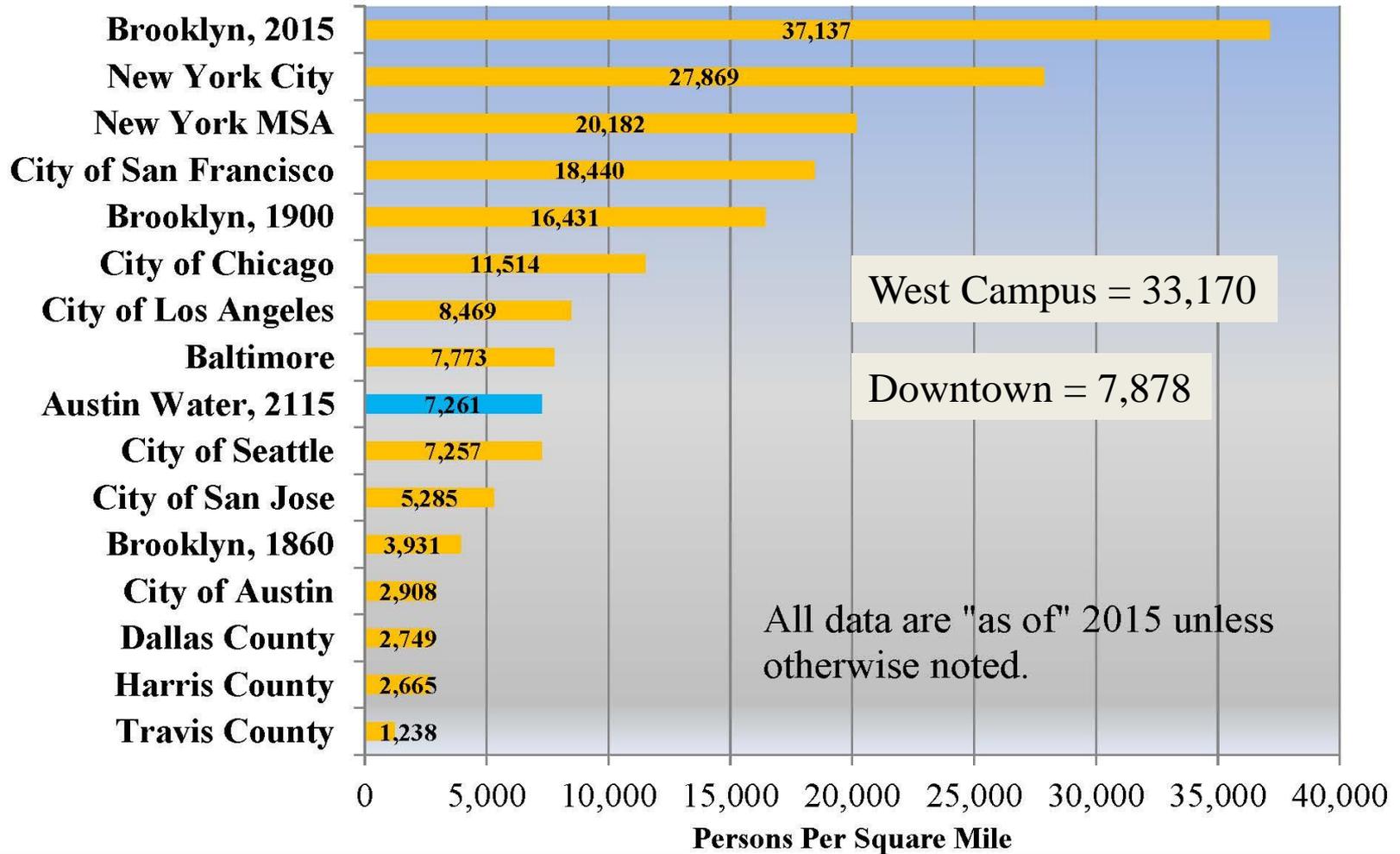
Long Range Population Forecast Scenario

Austin Water Study Area

Year	Portal+Forecast	Annualized Growth Rate
2010	875,936	
2015	977,491	2.2%
2020	1,101,632	2.4%
2025	1,216,291	2.0%
2030	1,342,884	2.0%
2035	1,464,571	1.7%
2040	1,577,760	1.5%
2045	1,692,174	1.4%
2050	1,808,586	1.3%
2055	1,927,901	1.3%
2060	2,051,178	1.2%
2065	2,179,649	1.2%
2070	2,314,769	1.2%
2075	2,458,265	1.2%
2080	2,610,656	1.2%
2085	2,772,495	1.2%
2090	2,944,366	1.2%
2095	3,126,892	1.2%
2100	3,320,732	1.2%
2105	3,526,590	1.2%
2110	3,745,208	1.2%
2115	3,977,380	1.2%



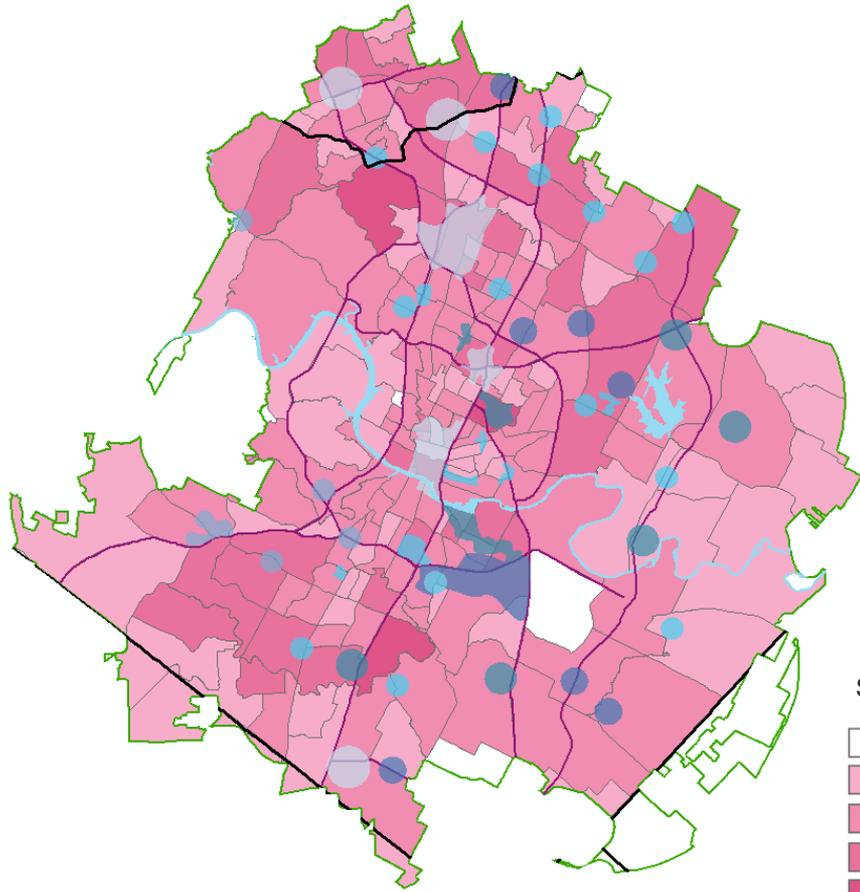
Population Density Comparisons



Served Population Projections

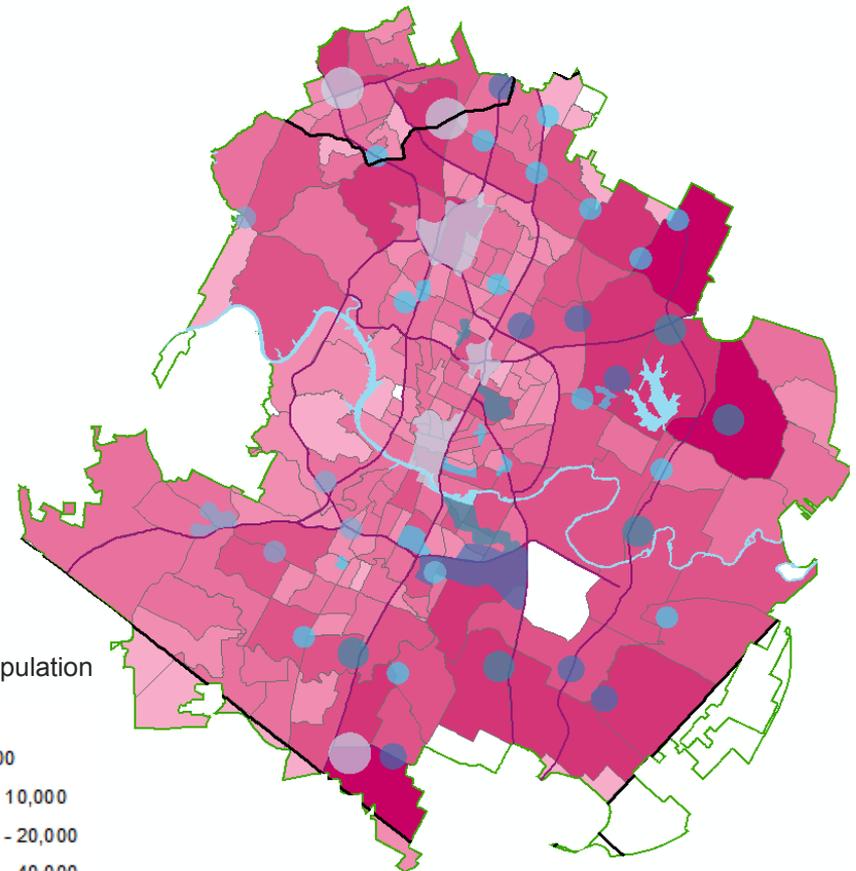
Imagine Austin Centers

- Activity Centers for Redevelopment in Sensitive Environmental Areas
- Job Center
- Neighborhood Center
- Regional Center
- Town Center



2040

Jan. 31, 2017



2115

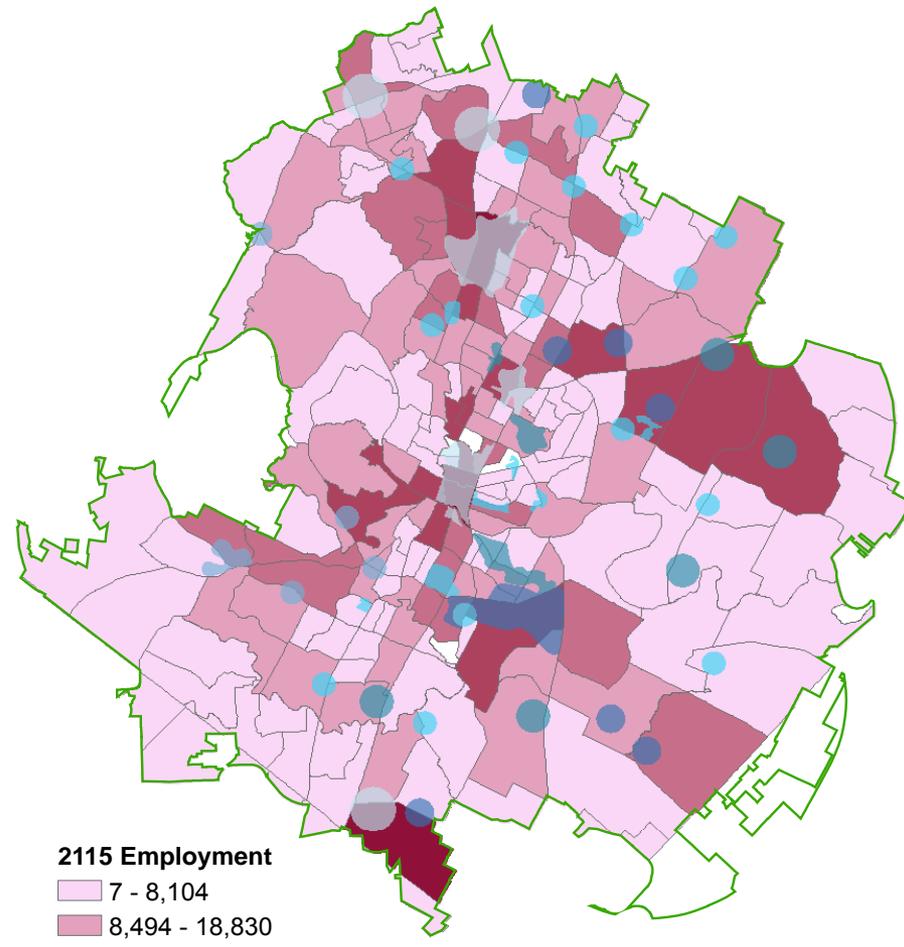
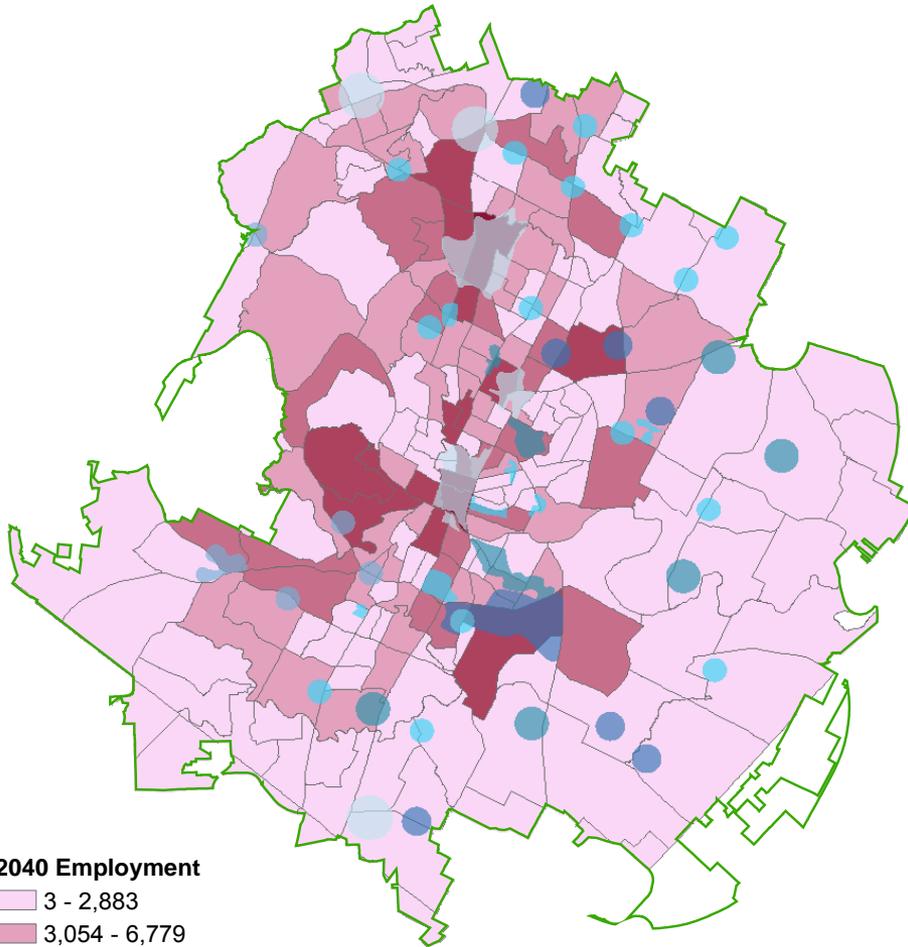
Served Population

- 0
- 1 - 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 40,000
- 40,001 - 75,000
- 75,001 - 154,982

Employment Projections for 2040 and 2115

Imagine Austin Centers

- Activity Centers for Redevelopment in Sensitive Environmental Areas
- Job Center
- Neighborhood Center
- Regional Center
- Town Center



2040 Employment

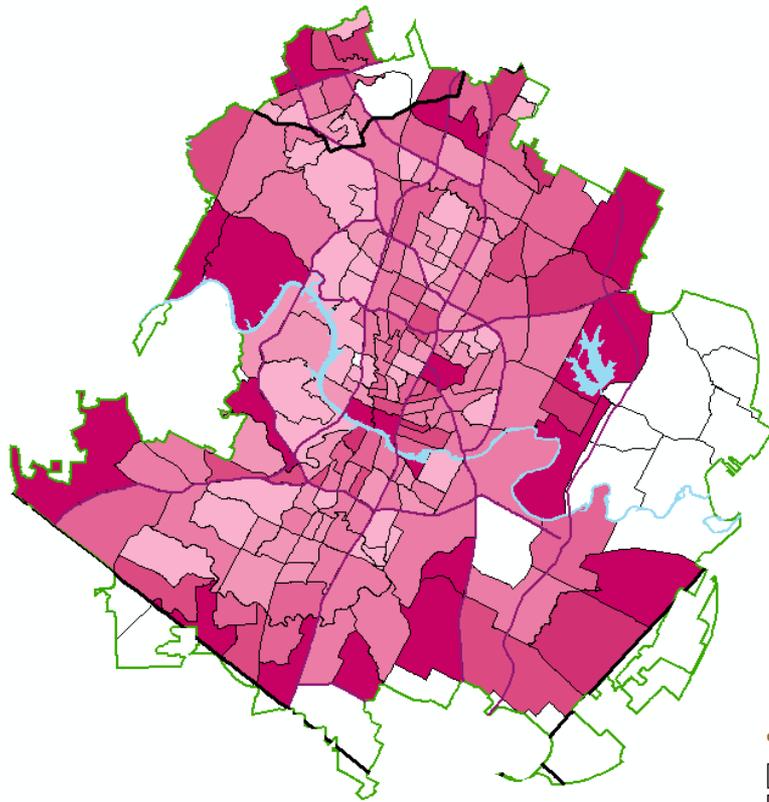
- 3 - 2,883
- 3,054 - 6,779
- 7,079 - 12,196
- 13,738 - 24,337
- 36,931 - 70,879

2115 Employment

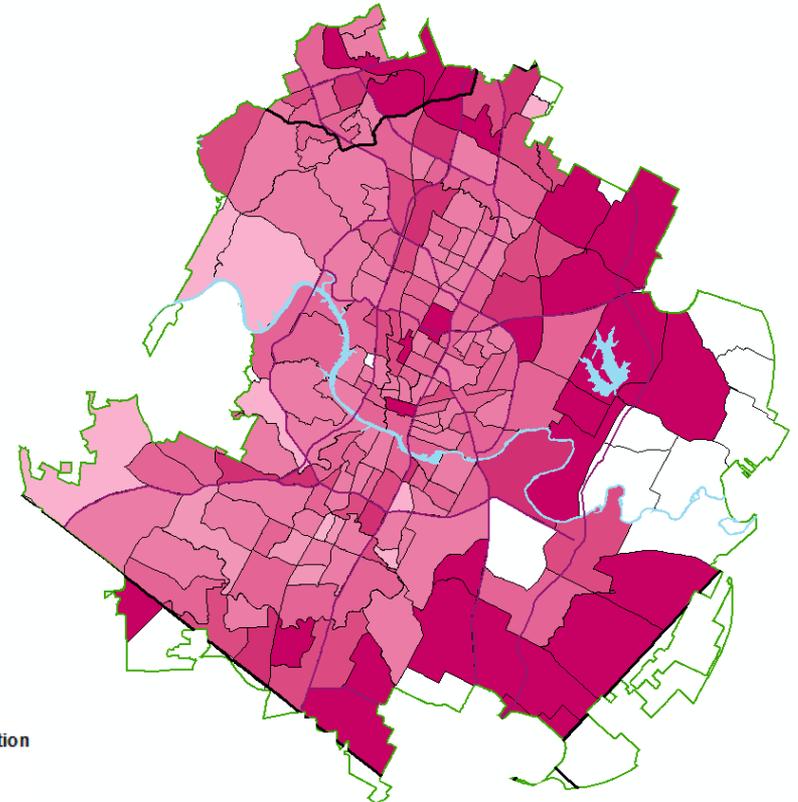
- 7 - 8,104
- 8,494 - 18,830
- 19,672 - 32,364
- 36,048 - 64,583
- 97,523 - 188,090

Jan 31, 2017

% Change in Population Between Planning Horizons

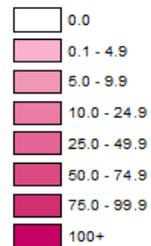


**2010-
2020**

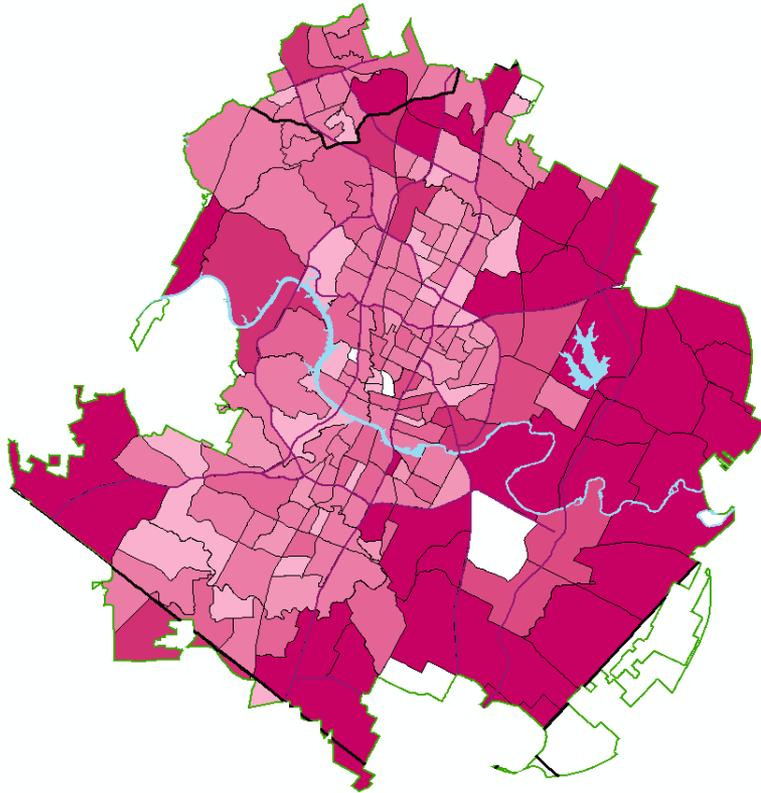


**2020-
2040**

% Change in Population

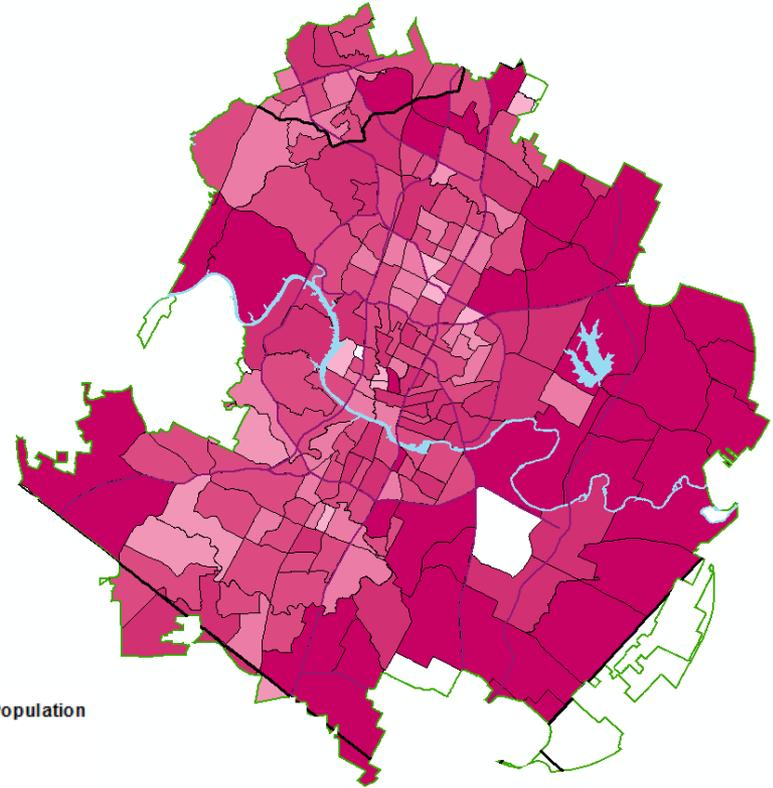
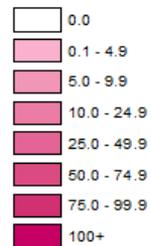


% Change in Population Between Planning Horizons



**2040-
2070**

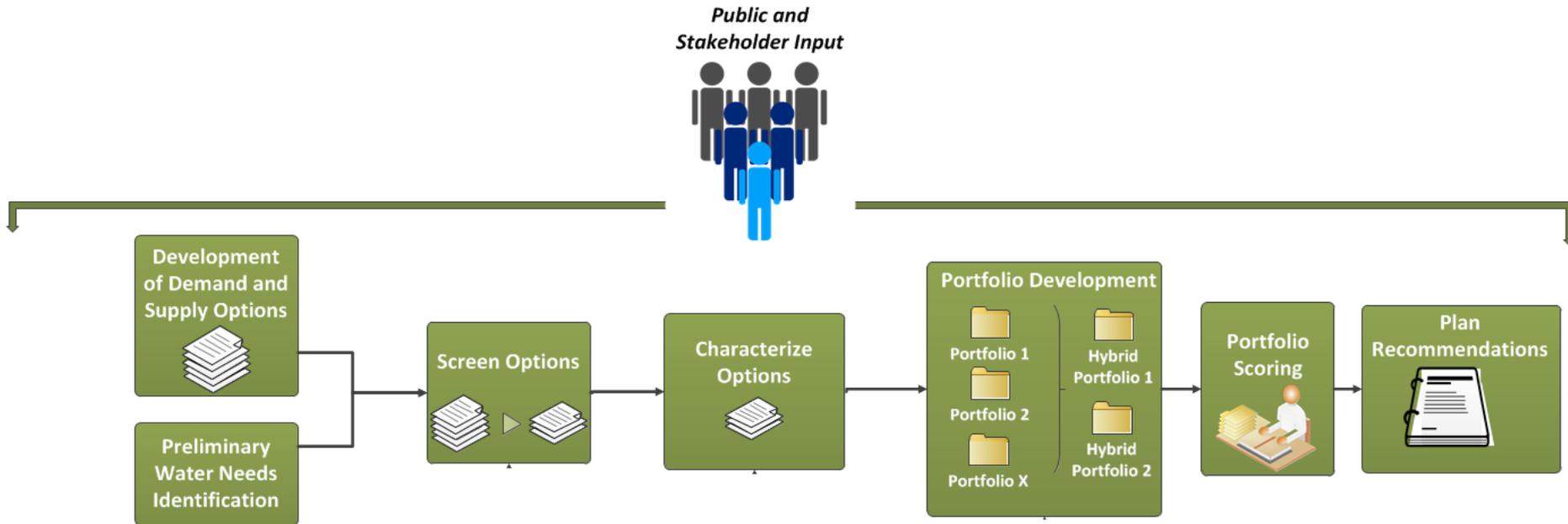
% Change in Population



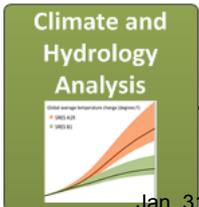
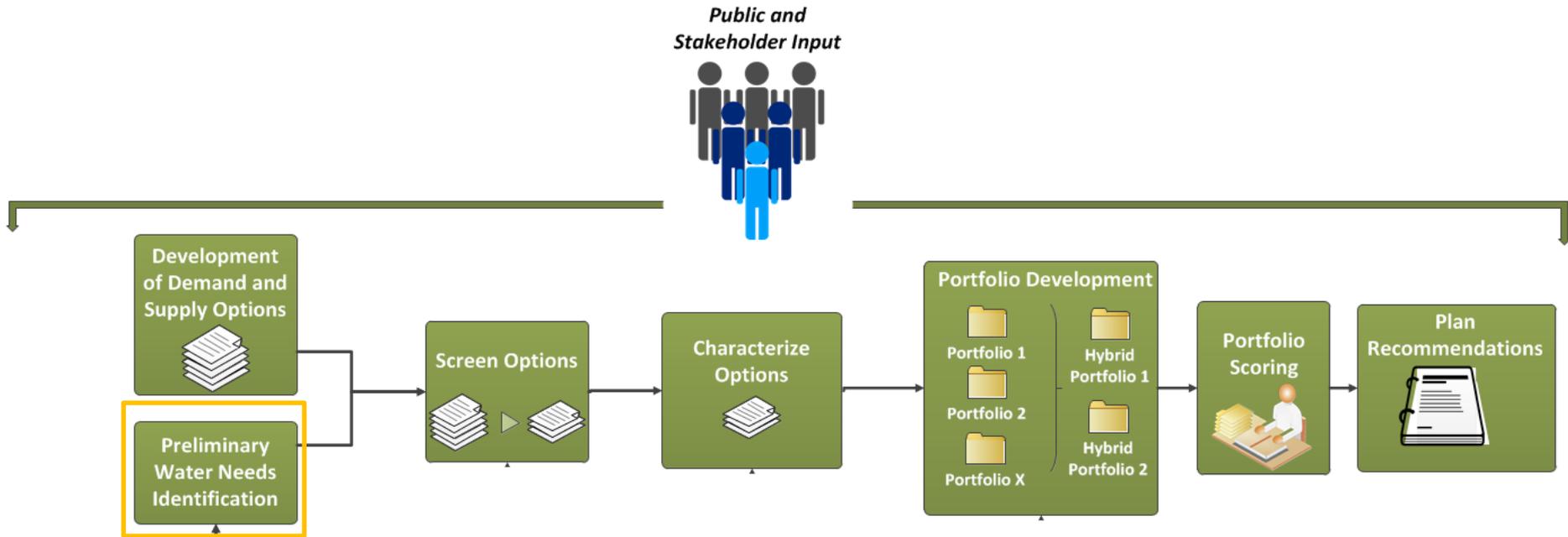
**2070-
2115**

How will demands be used in the IWRP?

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How will demands be used in the IWRP?

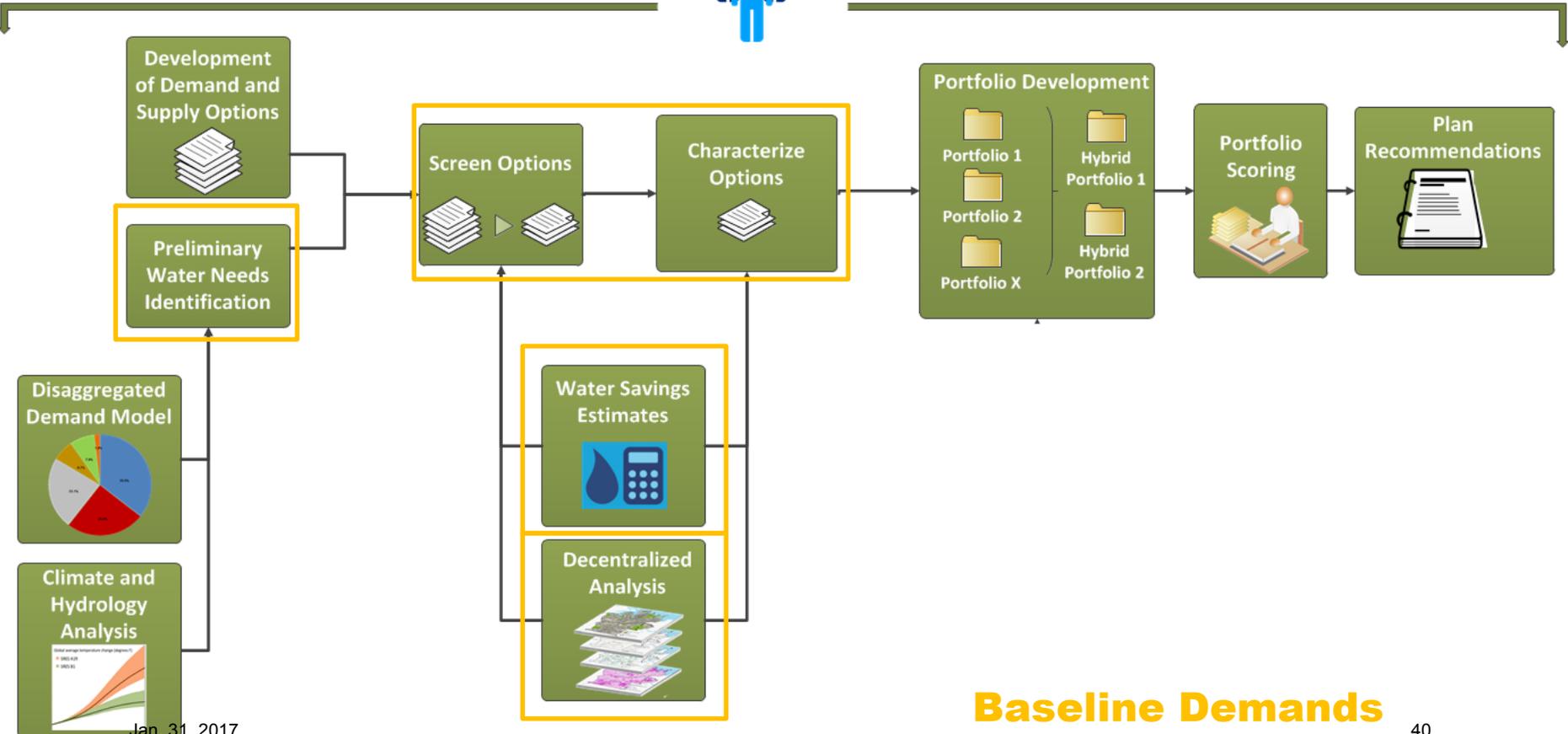


Jan. 31, 2017

Baseline Demands

How will demands be used in the IWRP?

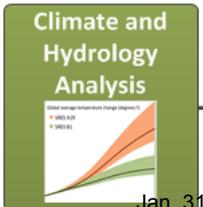
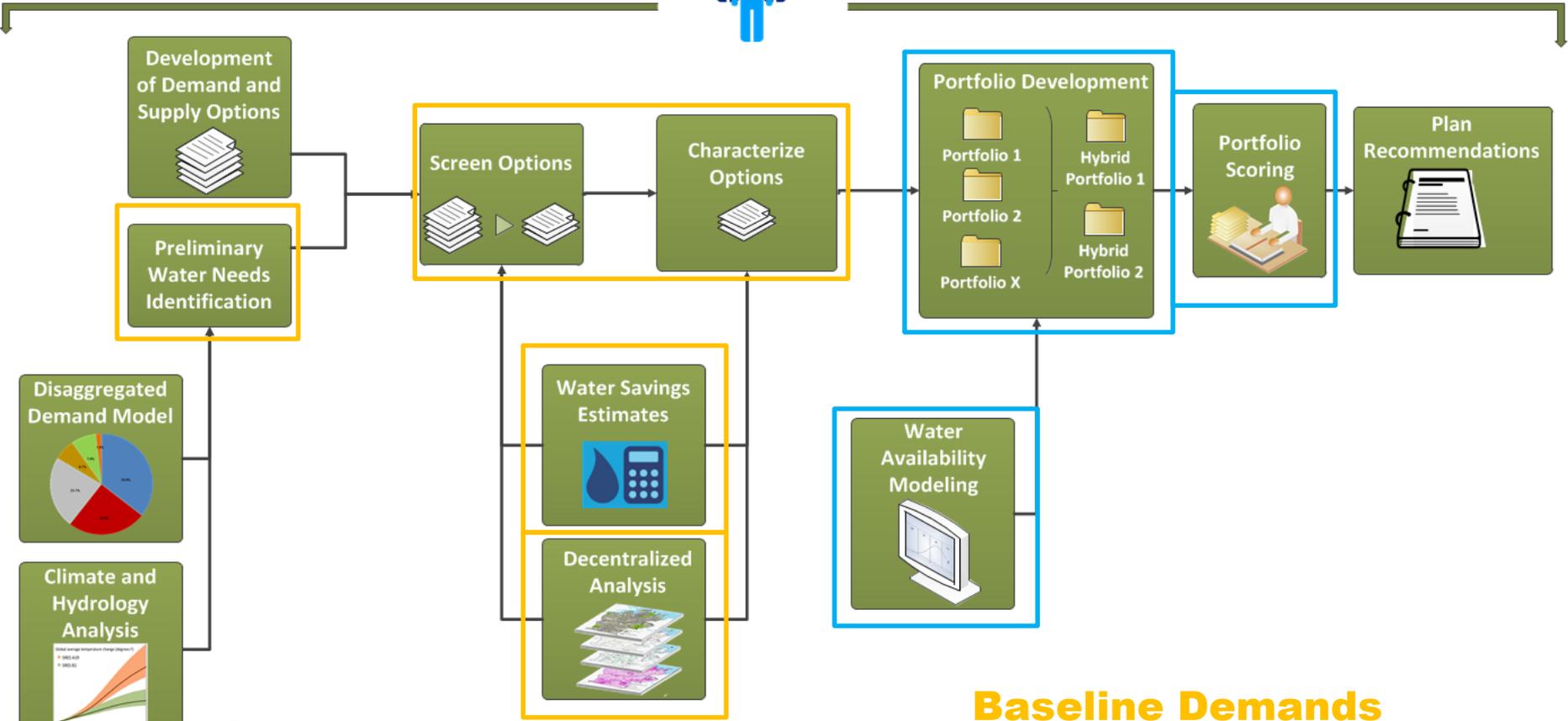
Public and Stakeholder Input



Baseline Demands

How will demands be used in the IWRP?

Public and Stakeholder Input



Jan. 31, 2017

Baseline Demands
Portfolio Adjusted Demands



To identify preliminary water needs:

- Baseline demands will be evaluated against four different hydrologic scenarios in the Water Availability Model (WAM)
- For scenarios B and D, baseline demands will be adjusted to simulate the impacts of climate change

Potential Hydrologic Conditions for WAM Simulations

<p>Period of Record Hydrology 1940 - 2016</p> <p>(A)</p> <p>77 Years</p>	<p>Period of Record Hydrology with adjustments to reflect climate change</p> <p>(B)</p> <p>77 Adjusted POR Years</p>
<p>Extended Sampling of Period of Record Conditions</p> <p>(C)</p> <p>10,000 Years</p> <p>MCMC hydrology allows for the simulation of droughts worse than experienced in the POR</p>	<p>Extended Conditions with Climate Change</p> <p>(D)</p> <p>10,000 Years</p> <p>MCMC & Climate Change</p>

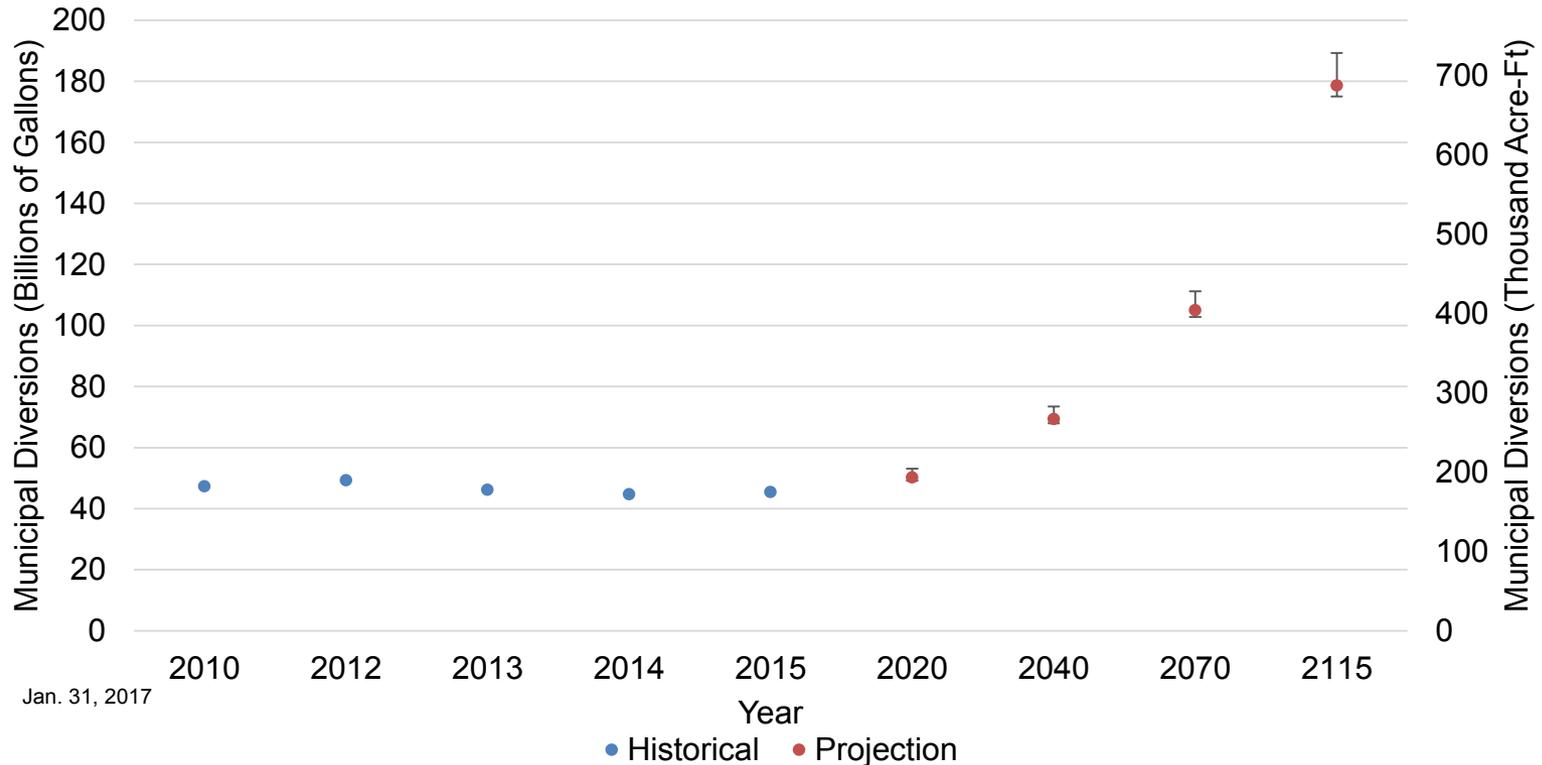


- For scenarios B and D, baseline demands will be adjusted to simulate the impacts of climate change

Potential Hydrologic Conditions for WAM Simulations

<p>Period of Record Hydrology 1940 - 2016</p> <p>(A) 77 Years</p>	<p>Period of Record Hydrology with adjustments to reflect climate change</p> <p>(B) 77 Adjusted POR Years</p>
<p>Extended Sampling of Period of Record Conditions</p> <p>(C) 10,000 Years</p> <p>MCMC hydrology allows for the simulation of droughts worse than experienced in the POR</p>	<p>Extended Conditions with Climate Change</p> <p>(D) 10,000 Years</p> <p>MCMC & Climate Change</p>

Weather Adjusted Municipal Diversions

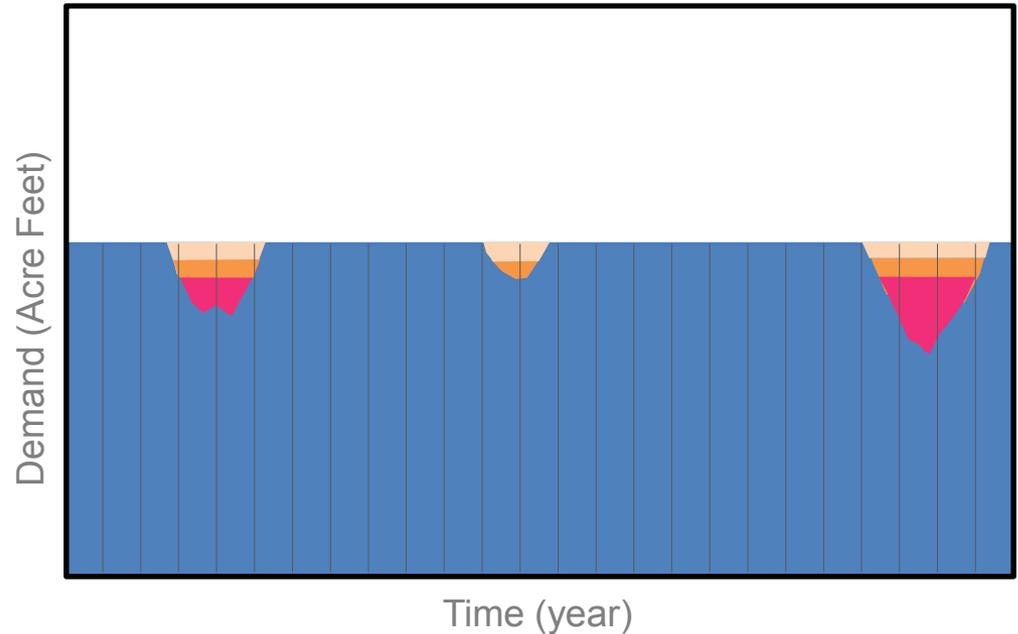




City of Austin's identified water needs will include:

- Prolonged periods when conditions would trigger implementation of Drought Contingency Plan Stages 3 & 4

2070 Demands Evaluated Against Period of Record Hydrology



Austin Water, 2070 Projection of Baseline Demand for River Pumpage, Acre-Feet

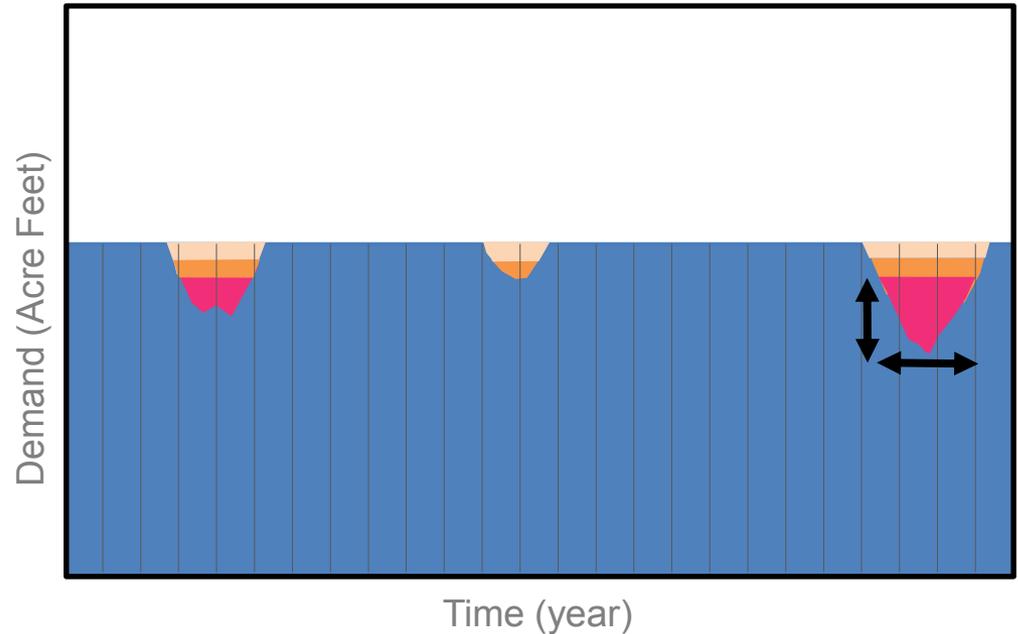
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	% of Total
Conservation Stage	22,279	21,679	23,024	22,961	25,576	28,770	32,517	34,514	31,090	30,599	25,067	23,951	322,025	100.0%
Stage I	21,954	21,451	22,573	22,520	24,632	27,086	29,788	31,151	28,781	28,429	24,228	23,330	305,924	95.0%
Stage II	21,611	21,209	22,098	22,057	23,657	25,386	27,109	27,897	26,490	26,267	23,359	22,683	289,823	90.0%
Stage III	20,884	20,694	21,096	21,079	21,641	21,955	21,856	21,620	21,949	21,965	21,554	21,326	257,620	80.0%
Stage IV	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	241,519	75.0%



City of Austin's identified water needs will include:

- Prolonged periods when conditions would trigger implementation of Drought Contingency Plan Stages 3 & 4

2070 Demands Evaluated Against Period of Record Hydrology



Austin Water, 2070 Projection of Baseline Demand for River Pumpage, Acre-Feet

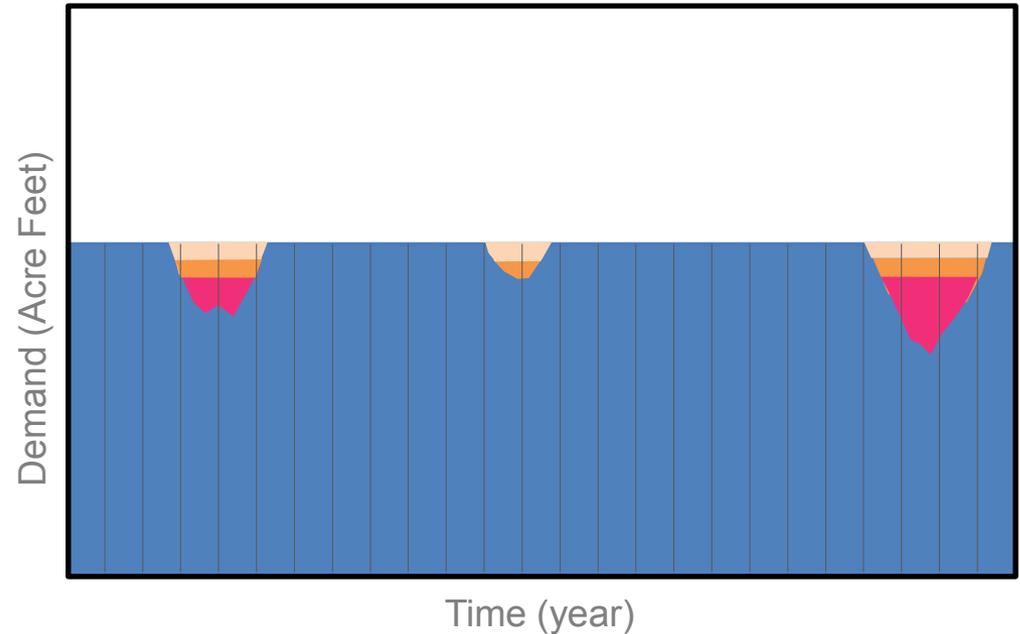
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	% of Total
Conservation Stage	22,279	21,679	23,024	22,961	25,576	28,770	32,517	34,514	31,090	30,599	25,067	23,951	322,025	100.0%
Stage I	21,954	21,451	22,573	22,520	24,632	27,086	29,788	31,151	28,781	28,429	24,228	23,330	305,924	95.0%
Stage II	21,611	21,209	22,098	22,057	23,657	25,386	27,109	27,897	26,490	26,267	23,359	22,683	289,823	90.0%
Stage III	20,884	20,694	21,096	21,079	21,641	21,955	21,856	21,620	21,949	21,965	21,554	21,326	257,620	80.0%
Stage IV	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	20,127	241,519	75.0%



City of Austin's identified water needs will include:

- Prolonged periods when conditions would trigger implementation of Drought Contingency Plan Stages 3 & 4
- Projected demands above current 325,000 AF contract with LCRA

2070 Demands
Evaluated Against Period of Record Hydrology

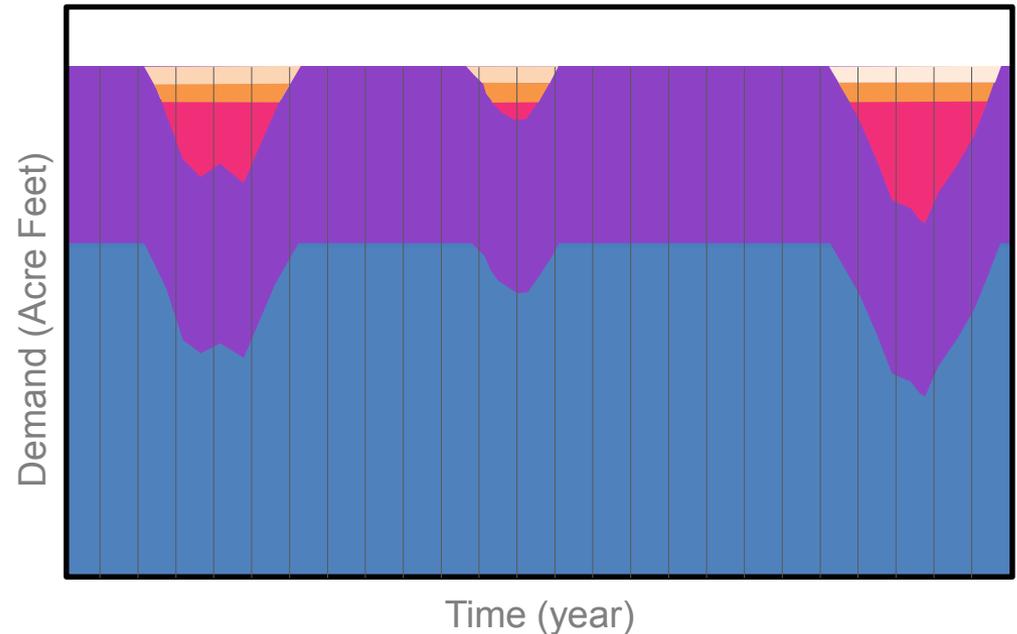




City of Austin's identified water needs will include:

- Prolonged periods when conditions would trigger implementation of Drought Contingency Plan Stages 3 & 4
- Projected demands above current 325,000 AF contract with LCRA

2115 Demands
Evaluated Against Period of Record Hydrology

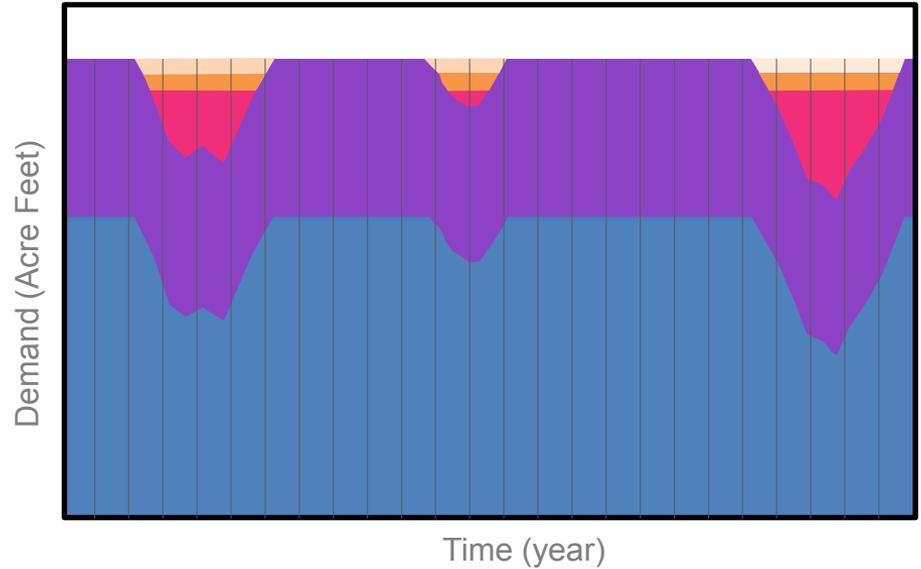


Purple Region = Baseline Demands Above 325,000 AF

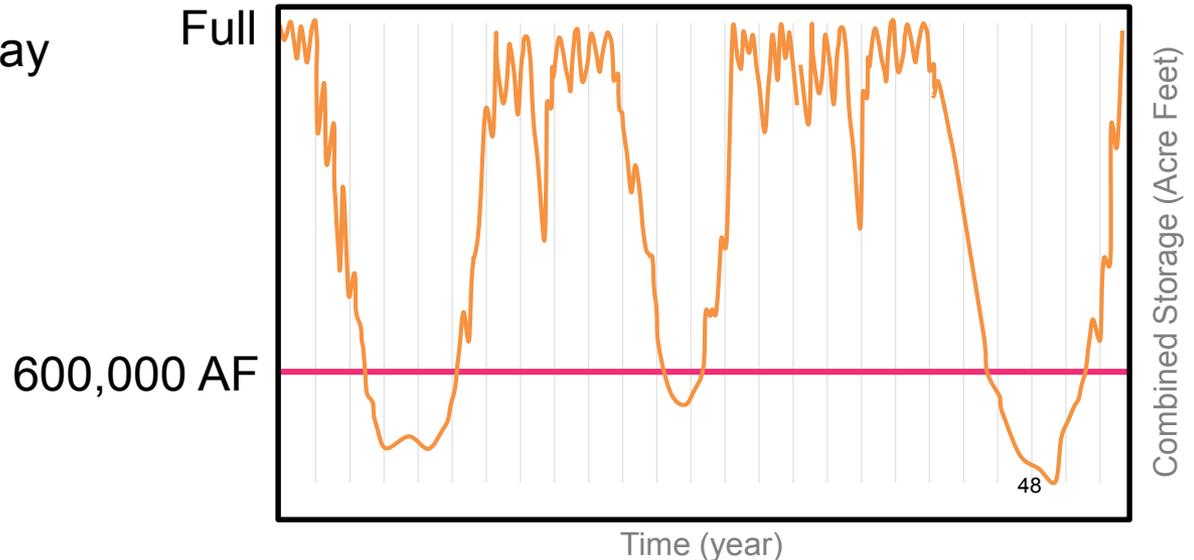


- Future hydrologic scenarios may identify regional water needs
- Despite assumed cutbacks on the part of AW and others, reservoir levels may still go below emergency levels

2115 City of Austin Supplies versus Demand



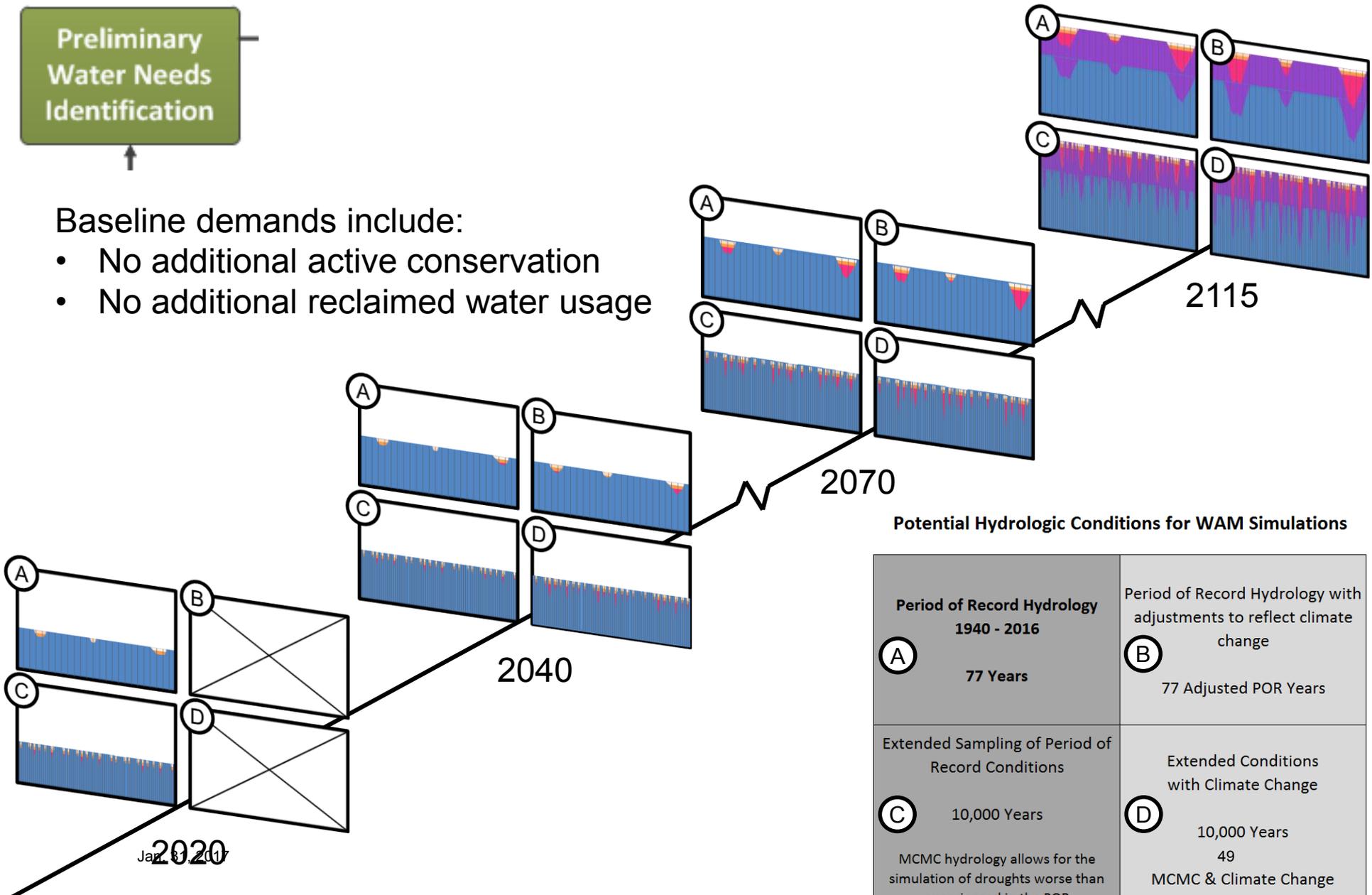
Highland Lakes Combined Storage Levels



Preliminary Water Needs Identification

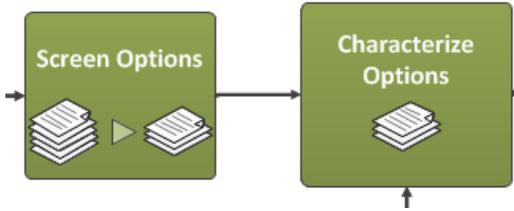
Baseline demands include:

- No additional active conservation
- No additional reclaimed water usage

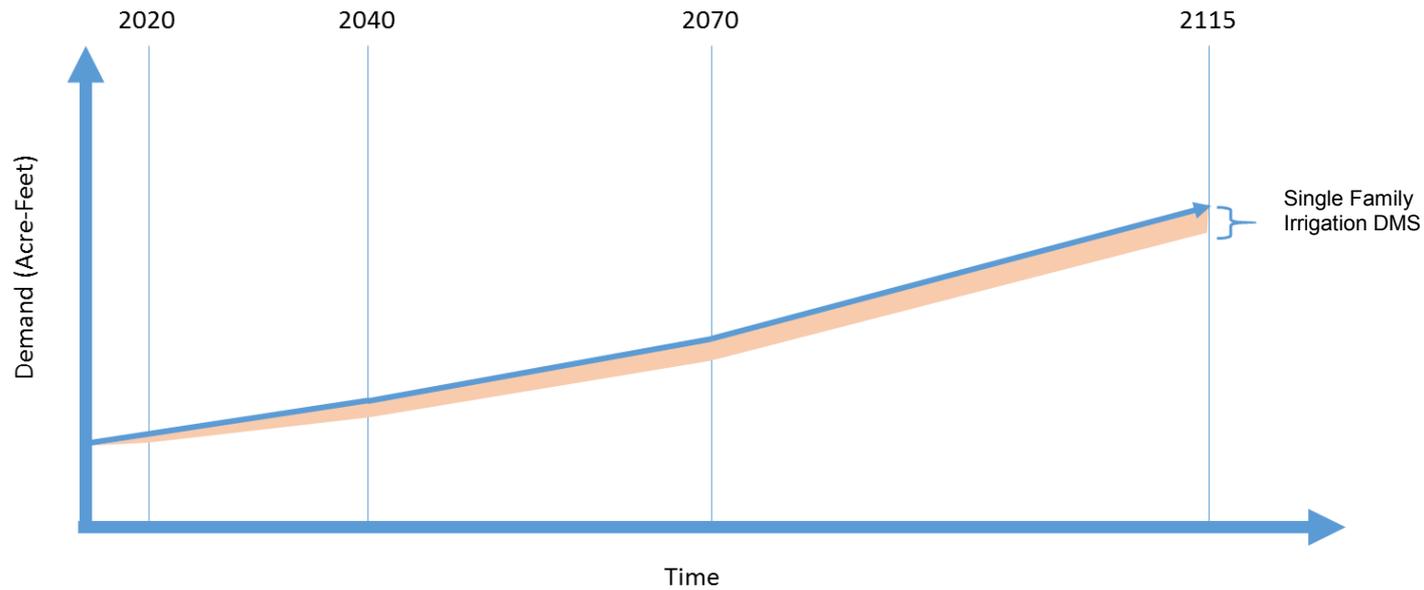
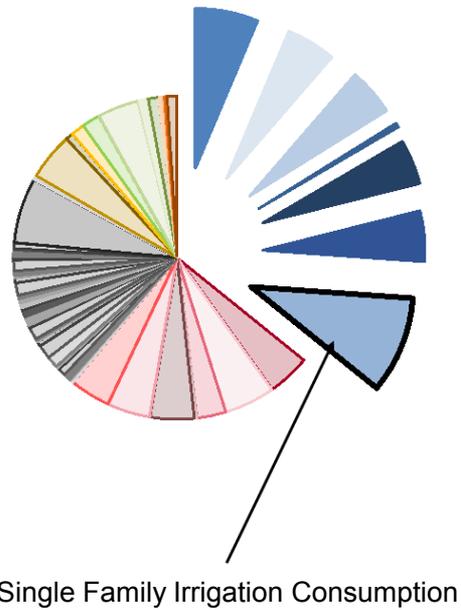


Potential Hydrologic Conditions for WAM Simulations

<p>Period of Record Hydrology 1940 - 2016</p> <p>A</p> <p>77 Years</p>	<p>Period of Record Hydrology with adjustments to reflect climate change</p> <p>B</p> <p>77 Adjusted POR Years</p>
<p>Extended Sampling of Period of Record Conditions</p> <p>C</p> <p>10,000 Years</p> <p>MCMC hydrology allows for the simulation of droughts worse than experienced in the POR</p>	<p>Extended Conditions with Climate Change</p> <p>D</p> <p>10,000 Years 49 MCMC & Climate Change</p>

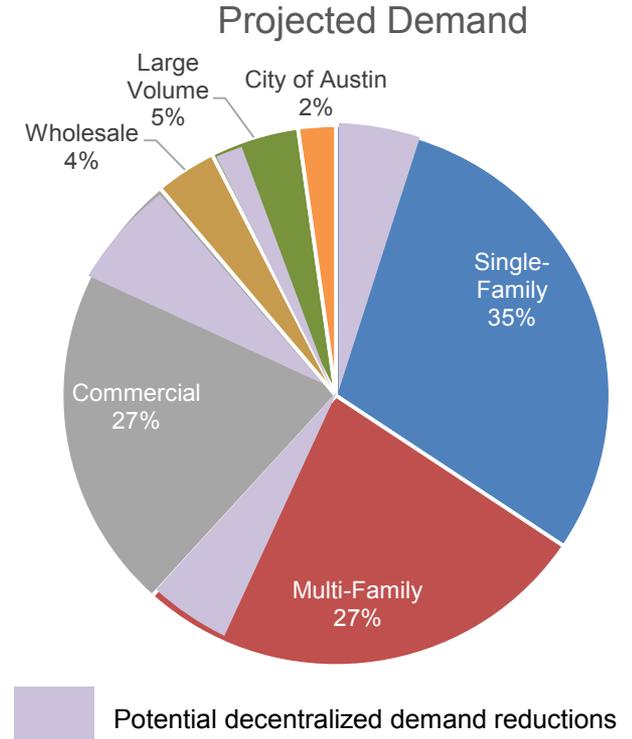
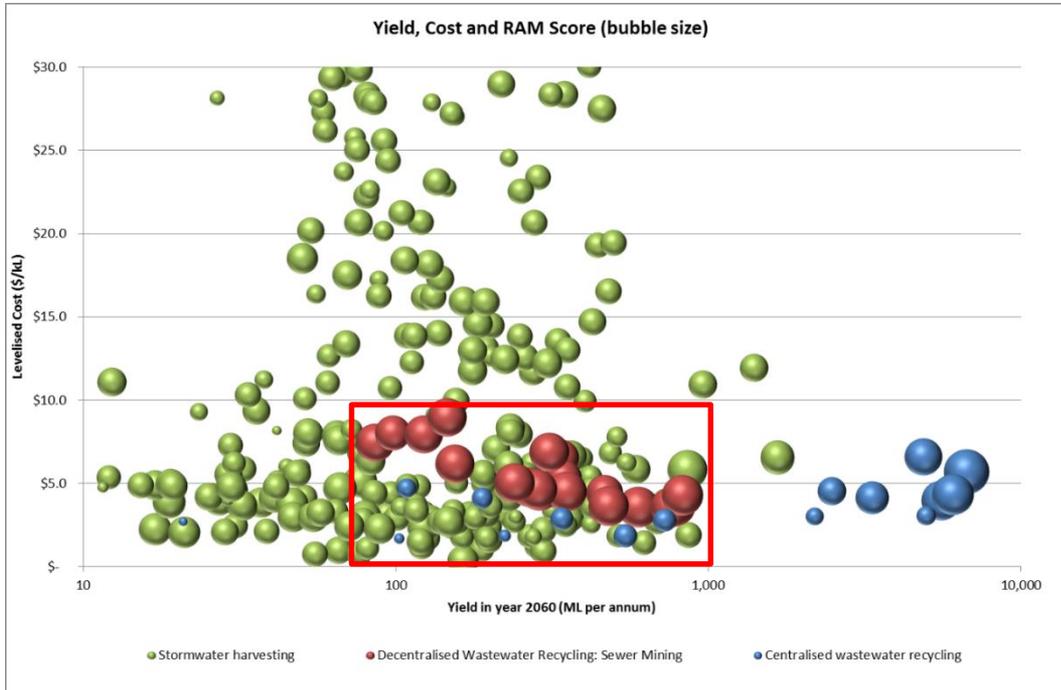


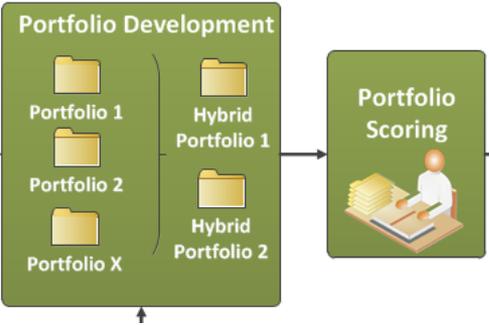
Comparison of Hypothetical Demand Management Strategy (DMS) to Baseline Demand



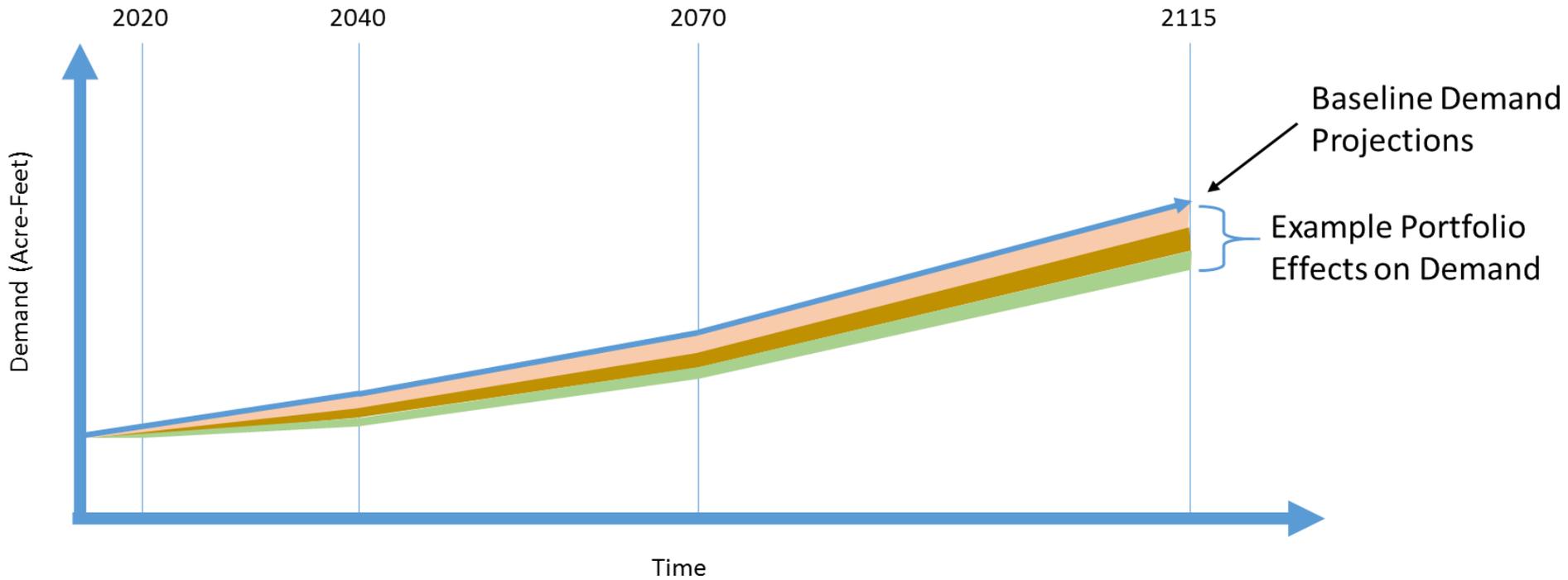


Task 6.3: Decentralized Opportunities



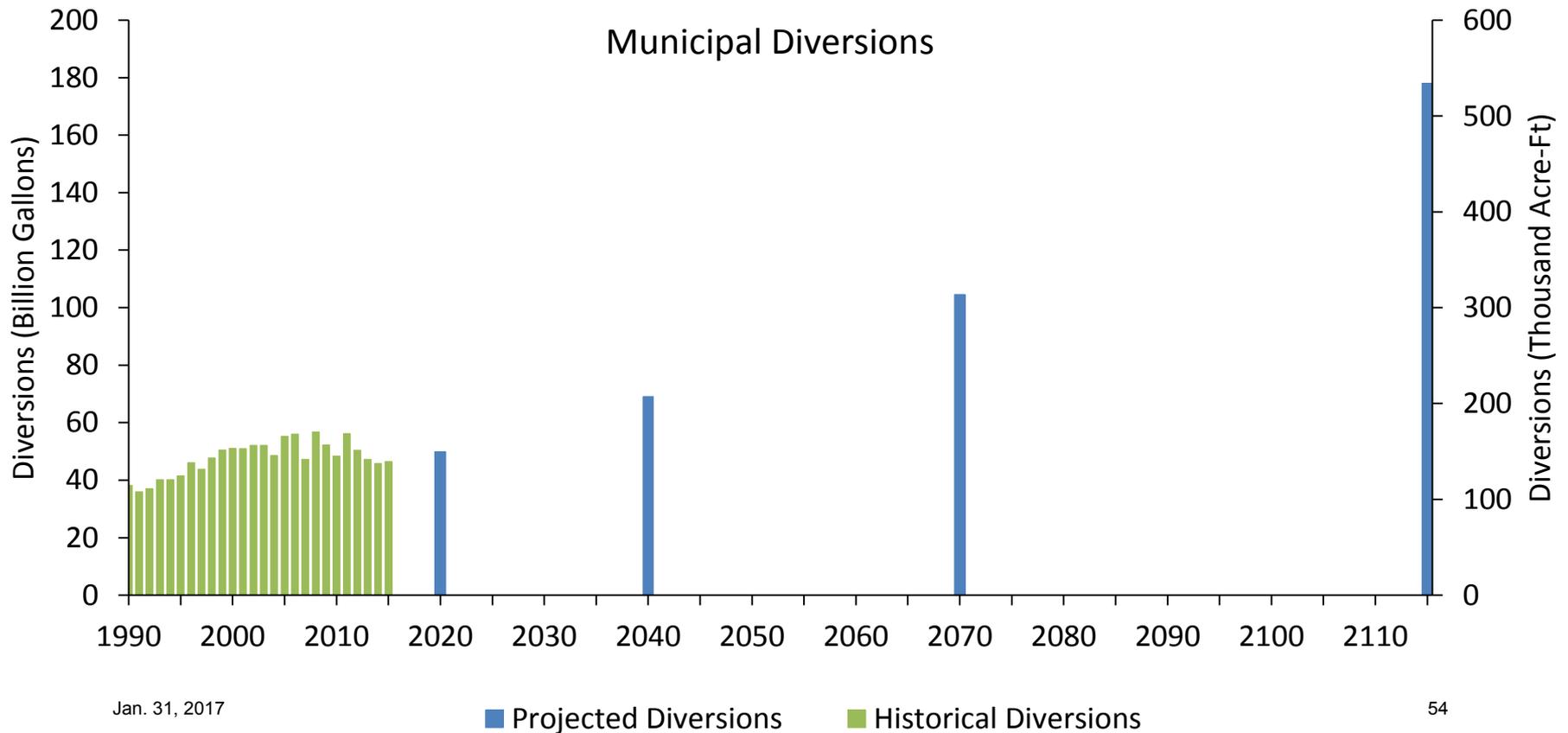


Baseline Demands Will Be Used to Evaluate Various Portfolios

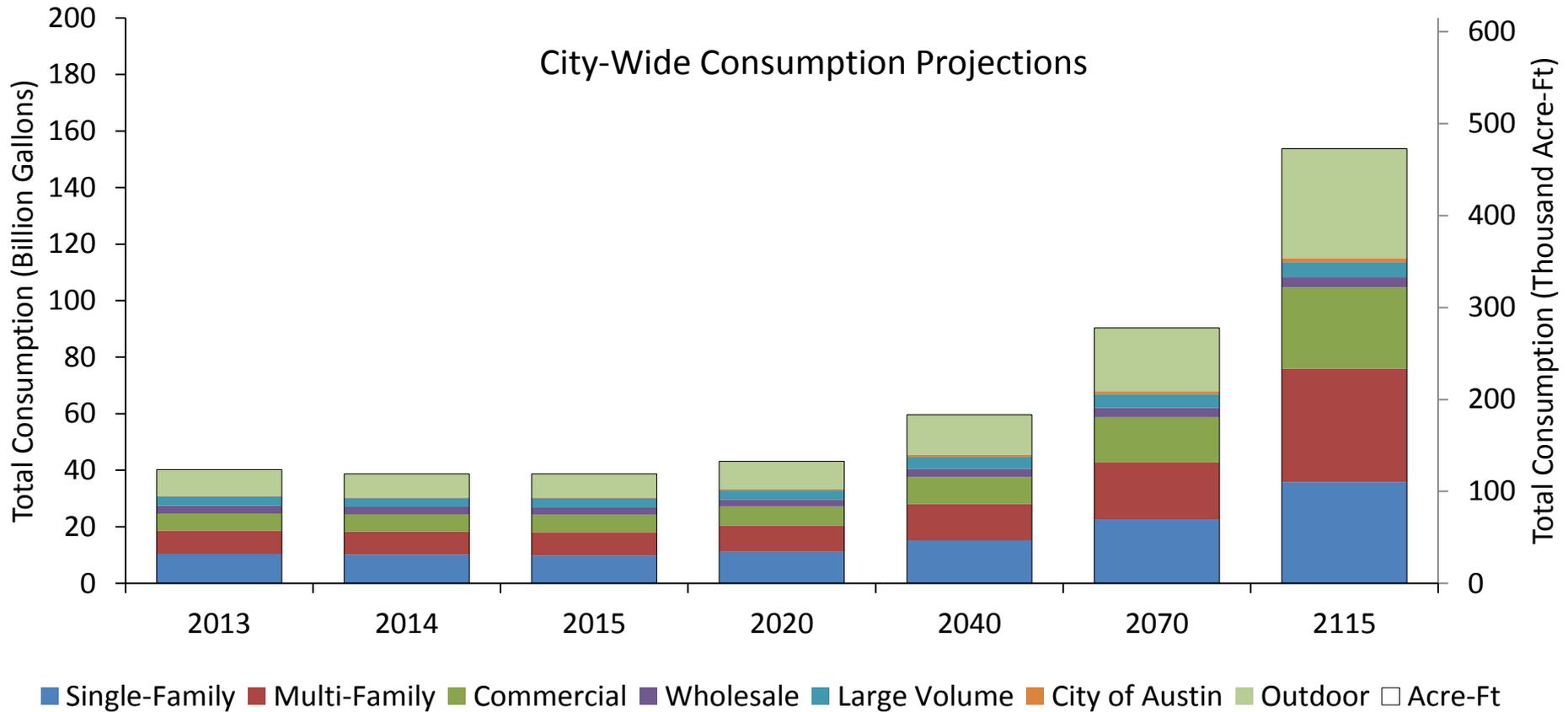


Results From the Model

Baseline Demand Projections

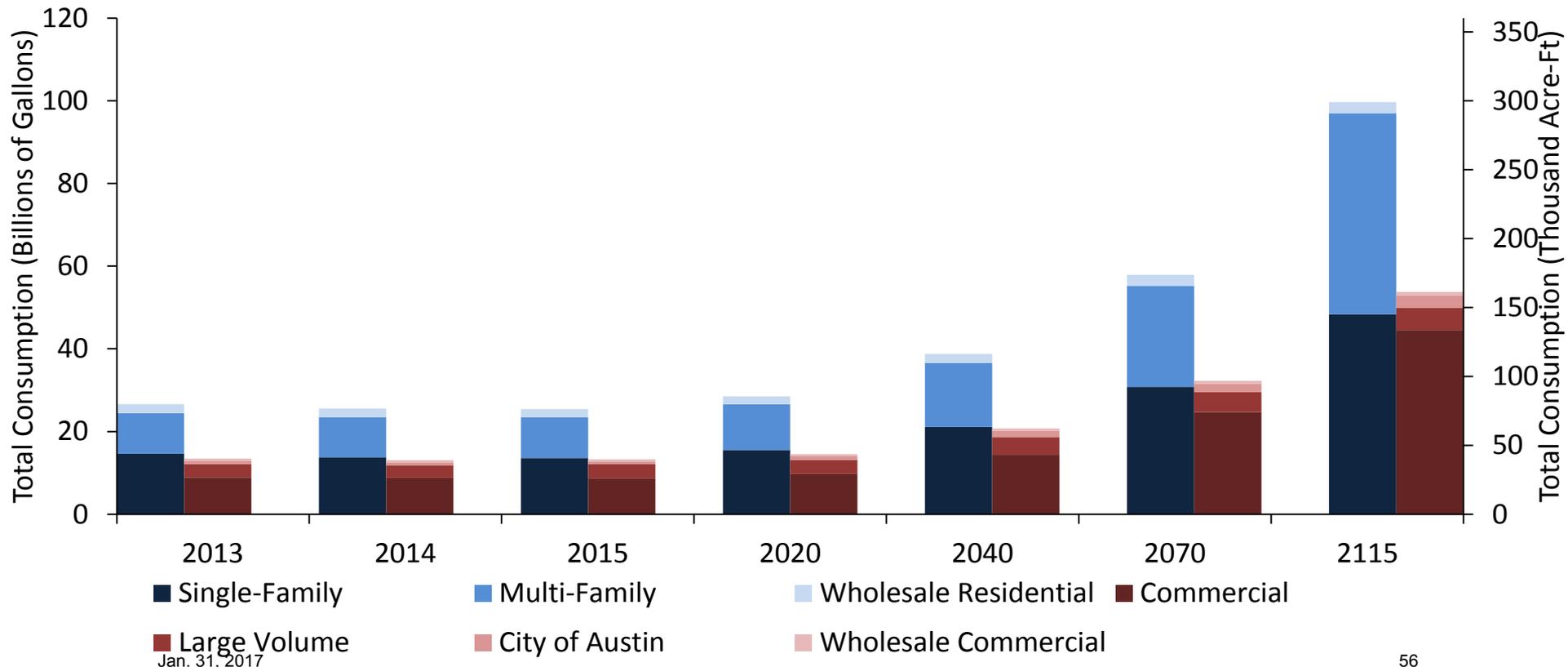


Baseline Demand Projections

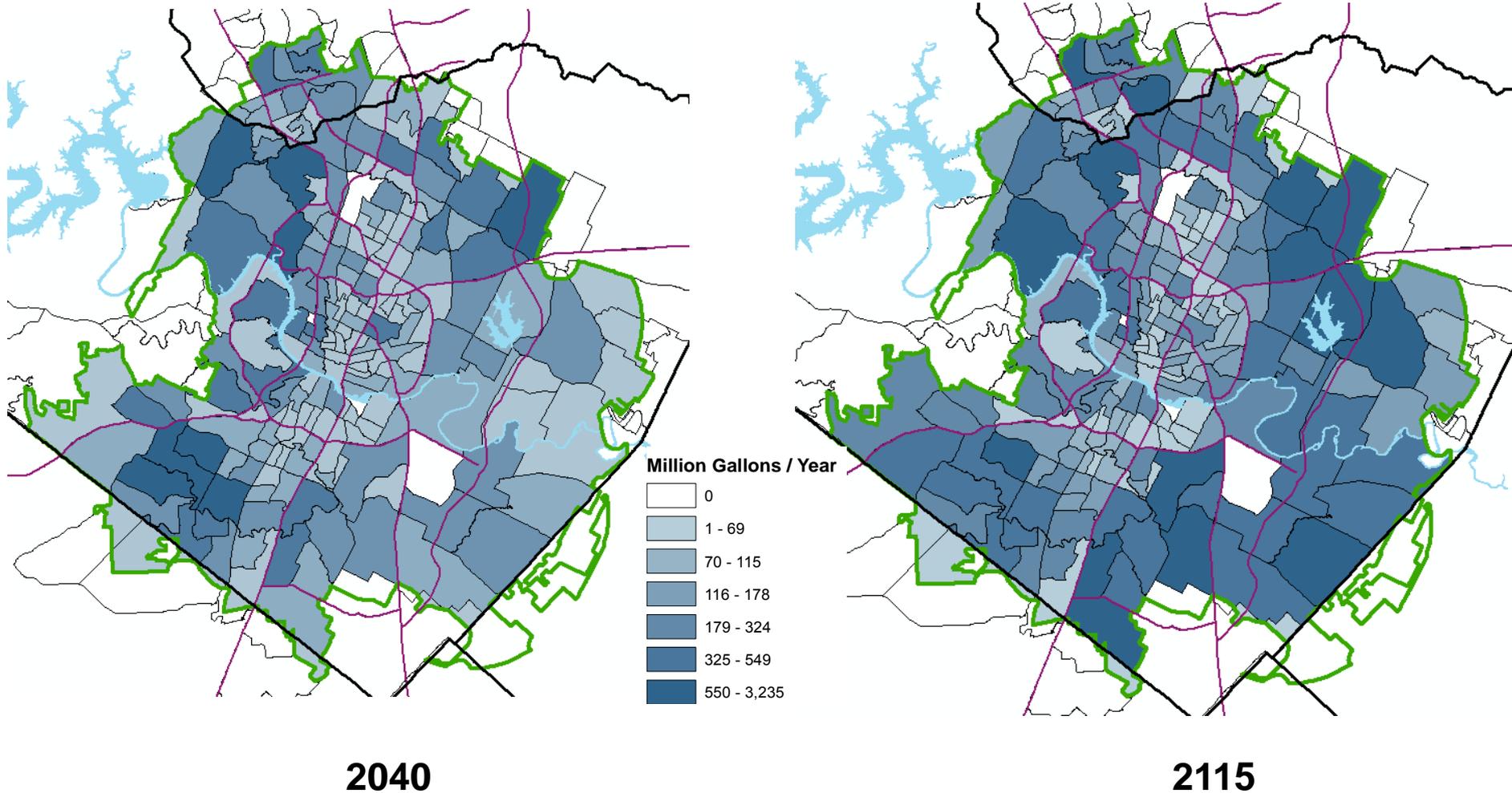


Baseline Demand Projections

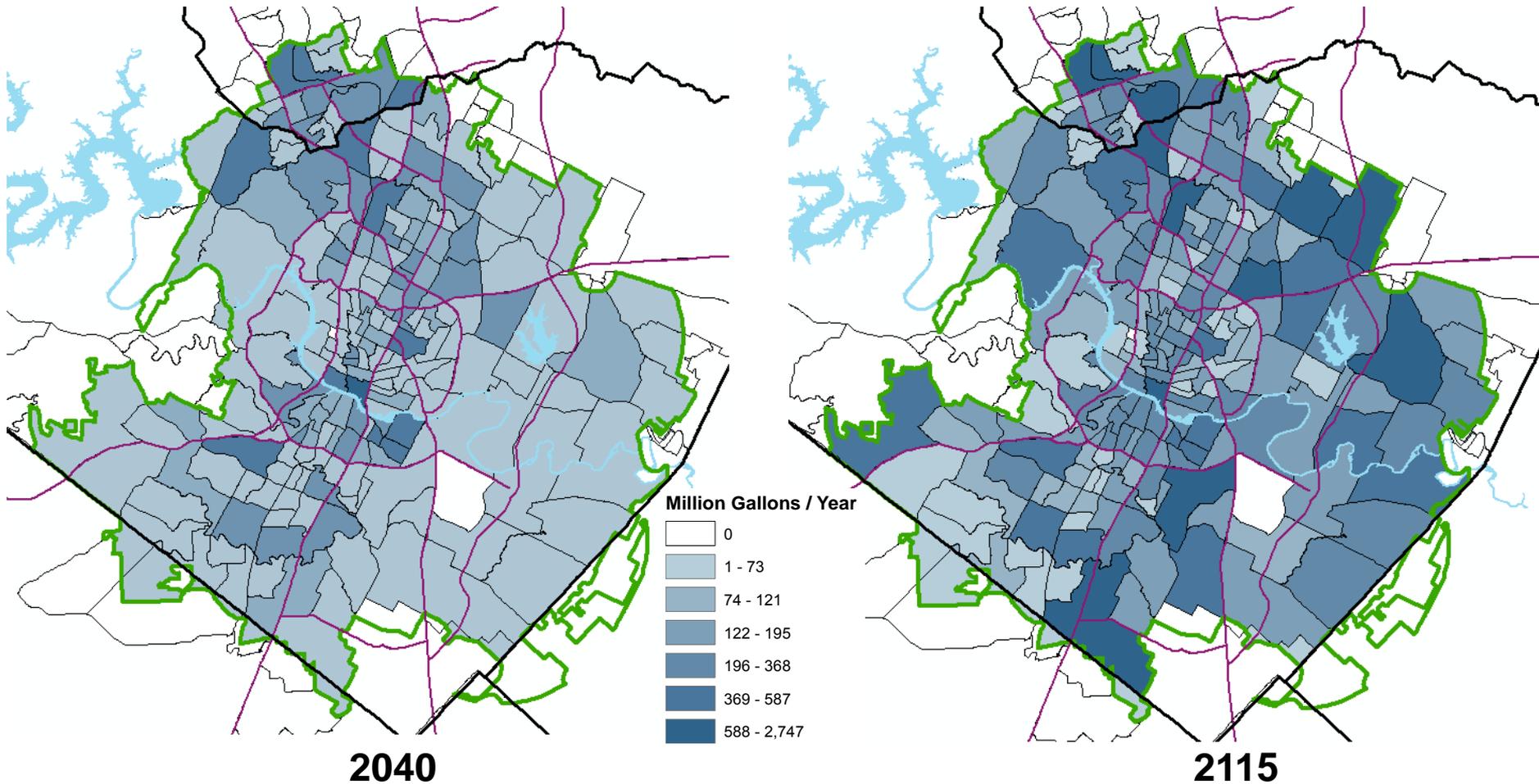
Residential vs. Non-Residential Consumption



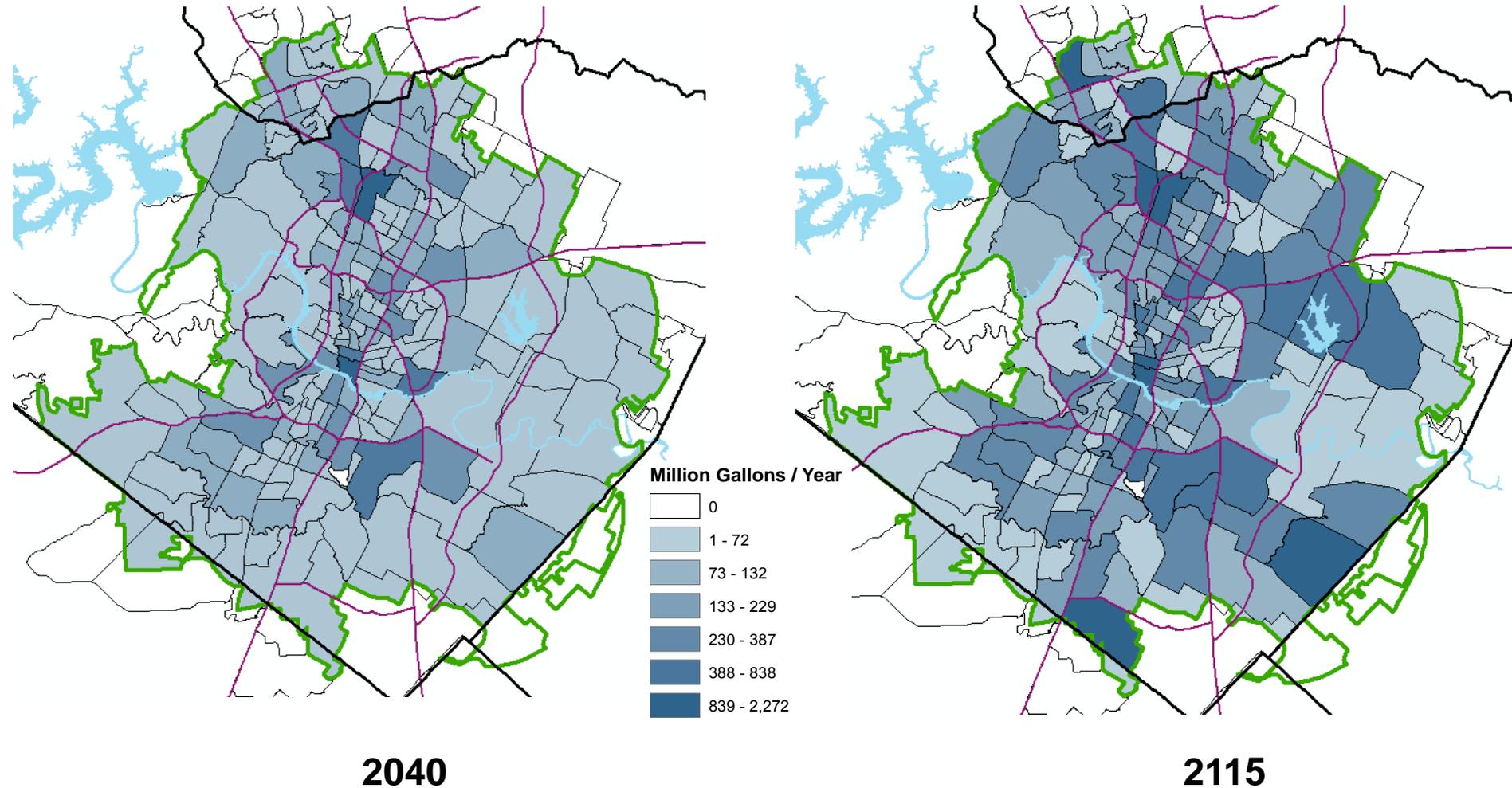
Projected Single Family Consumption by DTI Polygon



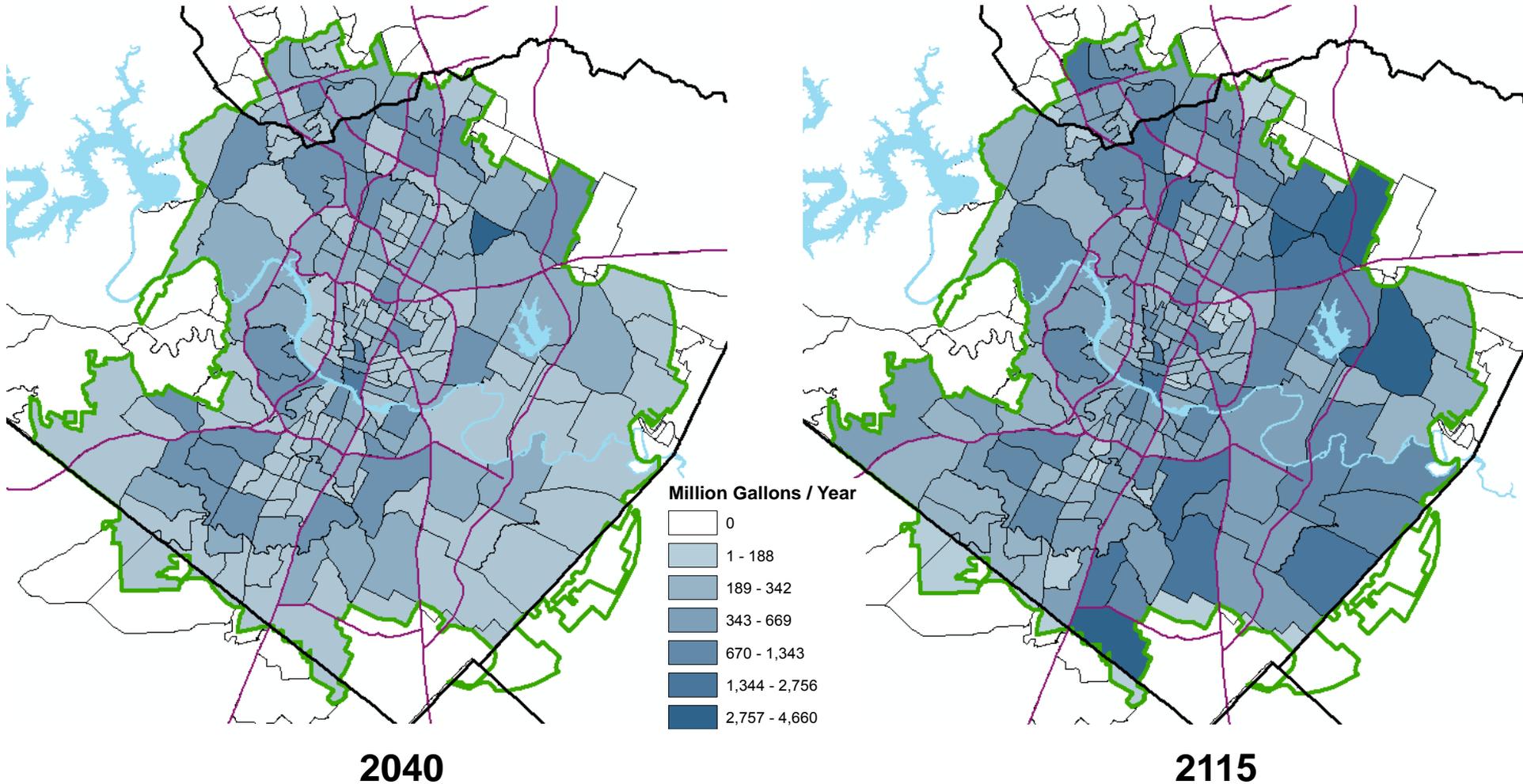
Projected Multi-family Consumption by DTI Polygon



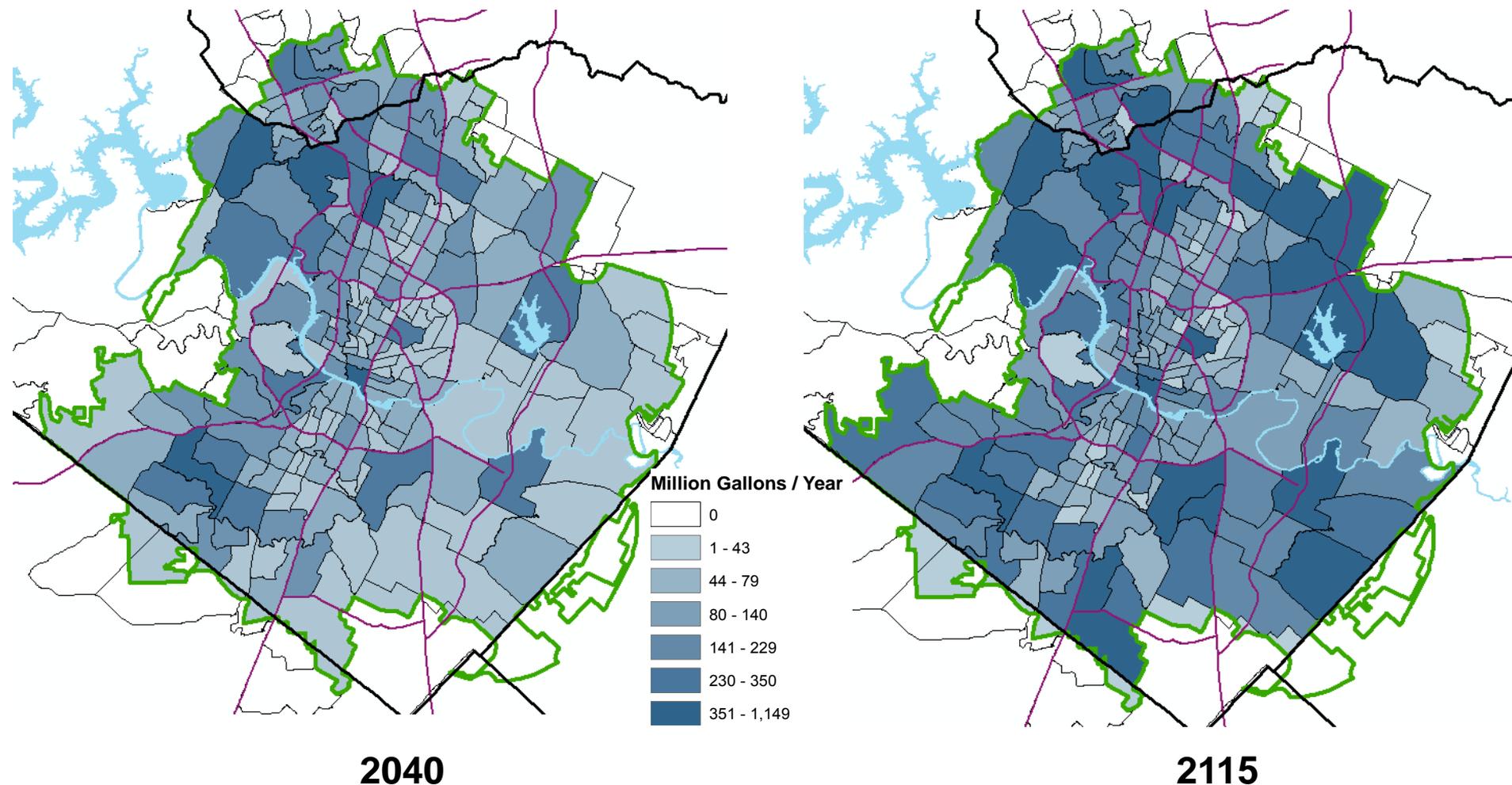
Projected Commercial Consumption by DTI Polygon



Projected Indoor Consumption by DTI Polygon



Projected Outdoor Consumption by DTI Polygon



Next Steps

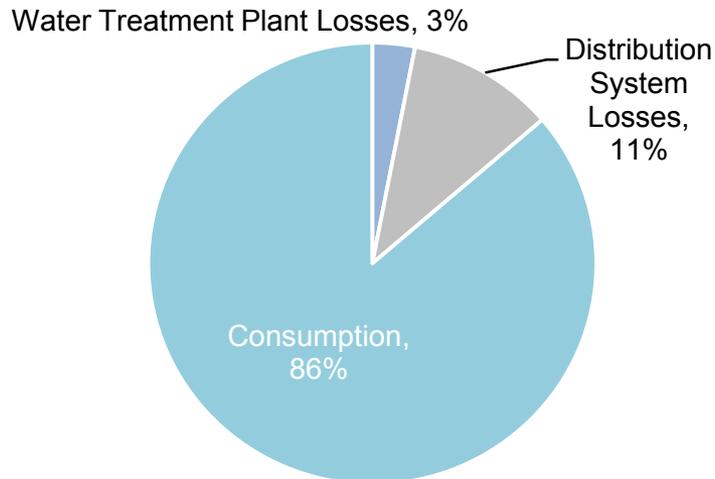
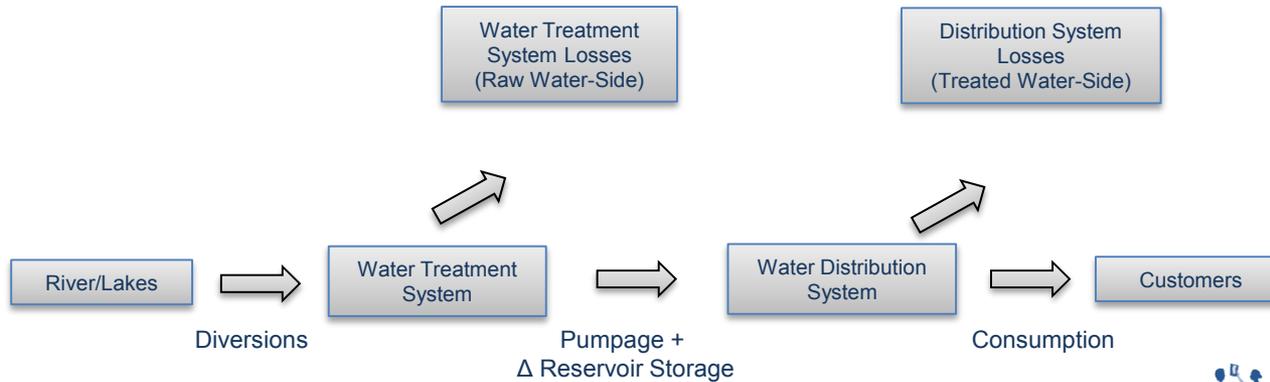
Next Steps

- February 7th Task Force meeting
 - Preliminary water needs identification
 - Demand management and supply side options
- Water Forward Public Workshop #2
 - Wednesday, February 8, 2017
 - 6pm – 8:30pm
 - AISD Performing Arts Center
 - Multipurpose Room
 - 1500 Barbara Jordan Boulevard
 - Austin, TX 78723

Backup Slides

The Demand Model Also Incorporates Water Losses

Typical Water Flow In Austin’s Water System



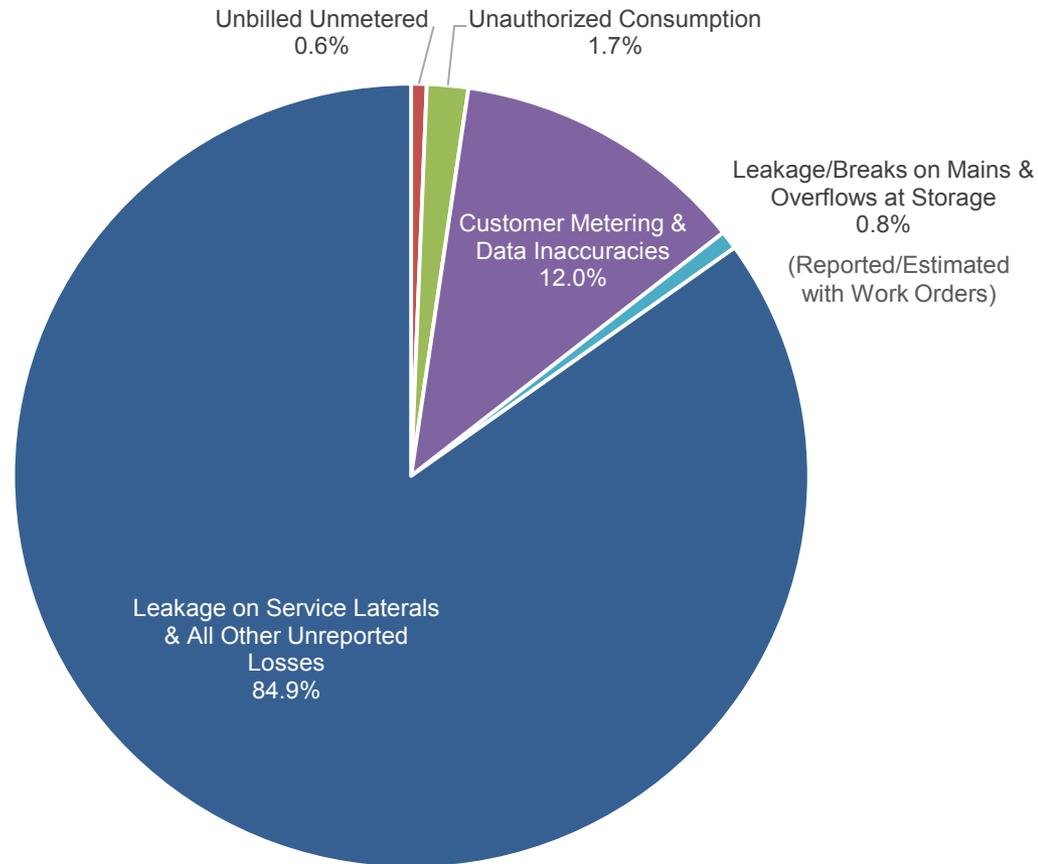
Water Consumption and Losses after Diversions*

Authorized Consumption	Billed Authorized Consumption	Billed Water Exported (AW wholesale customers)	Revenue Water
		Billed Metered Consumption (AW retail customers)	
		Billed Unmetered Consumption (Other COA department field operations)	
	Unbilled Authorized Consumption	Unbilled Metered Consumption (AW facilities)	
Water Losses	Apparent Losses	Unbilled Unmetered Consumption (Distribution system maintenance and fire suppression)	Non-Revenue Water
		Unauthorized Consumption	
	Real Losses	Customer Metering & Data Inaccuracies	
		Leakage/Breaks on Mains & Overflows at Storage (Reported/Estimated with Work Orders)	
		Leakage on Service Laterals & All Other Unreported Losses	
		Raw Water Used at Water Treatment Plants	Untreated Diversions

- Consumption in the Disaggregated Demand Model
- Distribution system losses in the Disaggregated Demand Model
- Jan. 31, 2017
Water treatment plant losses in the Disaggregated Demand Model

*Not to Scale

2014 & 2015 Average Distribution System Water Losses



Water Forward Plan

Key Dates for Demand Management and Supply Options Screening

Meetings

Deadlines

	Meetings				
9/6/16	Task Force Meeting - Initial list of demand management options				
10/4/16	Task Force Meeting - Initial list of supply side options and blue sky and list of 25 demand management options				
1/17/17	Task Force Meeting - Blue sky list of supply side options and list of 25 demand management options				
1/19/17	Targeted Stakeholder Meeting #1 - Demand Management Options with focus on Landscape Transformation and Irrigation Efficiency Ordinances and Incentives				
1/24/17	Targeted Stakeholder Meeting #2 - Demand Management Options with focus on Alternative Water Ordinances and Incentives that may include rainwater, gray water, and A/C condensate.				
1/26/17	Targeted Stakeholder Meeting #3 - Demand Management Options with focus on: <ul style="list-style-type: none"> • Development-focused Water Use Estimates and Benchmarking • Commercial, Industrial, and Institutional and Non-residential Ordinances • Plumbing Codes and Ordinances and Fixture Incentives • Reclaimed Water (centralized purple pipe system) Ordinances and Incentives 				
1/31/17	Task Force Meeting - Disaggregated Demand Model Follow-Up		1/31/17	AW to provide preliminary feedback notes from targeted stakeholder meetings to Task Force	
2/7/17	Task Force Meeting - Preliminary Water Needs Identification Presentation on Blue Sky List of supply side options Presentation on list of 25 Demand Management Options				
2/8/17	Public Workshop #2 - Austin's Future Water Supply Needs and Strategies to Meet Them				
2/10/17			2/10/17	AW to provide preliminary summary of general feedback from Public Workshop #2 to Task Force	
2/13/17			2/13/17	Task Force feedback received on list of 25 demand management options by 12noon	2/13/17
2/14/17			2/14/17	AW delivers list of 25 demand management options to Consultant	
3/7/17	Task Force Meeting - Presentation on screening from 25 to 10 demand management options Presentation on list of 22 supply side options				
3/13/17			3/13/17	Task Force feedback received on screened 10 demand management options	3/13/17
3/14/17			3/14/17	AW delivers final list of 10 demand management options to consultant	
3/20/17					3/20/17
5/2/17	Task Force meeting - Presentation on characterized 10 demand management options				
6/6/17	Task Force meeting - Presentation on screening from 22 to 10 supply options				
6/12/17					6/12/17
6/19/17					6/19/17

List of 25 Demand Management Options

Blue Sky List of Supply Options

List of 10 Demand Management Options

List of 22 Supply Options

List of 10 Supply Options

Austin Water - Demand Assumptions for Water Forward Modeling
DRAFT - SUBJECT TO CHANGE, 1/31/2017

	DEMAND CATEGORY / PARAMETER All Demands in units of acre-feet per year.	Year 2020	Year 2040	Year 2070	Year 2115
[1]	Firm Demands				
[2]	City of Austin Municipal Baseline Demand (Avg Year)	153,649	212,712	322,025	548,224
[3]	City of Austin Municipal Direct Reuse (Avg Year)	3,816	3,816	3,816	3,816
[3a]	City of Austin Parks and LBL Evap	1,415	1,415	1,415	1,415
[4]	COA Baseline + Reclaimed + Parks + LBL Evap Demand Total	158,880	217,943	327,256	553,455
[5]	Fayette County (Power generation downstream of lakes)	20,000	20,000	20,000	20,000
[6]	Sim Gideon / Lost Pines Demand	0	0	0	0
[7]	Llano County (Power generation near/upstream of lakes)	5,500	11,300	20,000	20,000
[8]	LCRA - Power Plant Demand	25,500	31,300	40,000	40,000
[9]	Fayette County	9,000	9,000	9,000	9,000
[10]	Travis County	9,000	9,500	9,500	9,500
[11]	City of Austin - Power Plant Demand	18,000	18,500	18,500	18,500
[12]	Municipal Firm Contract Demand	65,684	97,170	143,046	169,000
[13]	LCRA New Contracts (Region K Table 5-19)	2,877	19,154	33,654	45,000
[14]	Domestic lakeside use	5,000	5,000	5,000	5,000
[15]	LCRA Firm Irrigation	4,800	7,400	10,000	10,000
[16]	BRA - HB 1437 Demand	6,386	25,000	25,000	25,000
[17]	Manufacturing and Mining Demand	16,253	18,277	20,300	24,000
[18]	Other (Conveyance and Emergency Release)	5,000	5,000	5,000	5,000
[19]	Other Municipal, Industrial, Misc Firm Demands	106,000	177,000	242,000	283,000
[20]	Total Firm Demand, Rows 4+8+11+19:	308,380	444,743	627,756	894,955
[21]	STPNOC ROR + LCRA Backup	102,000	102,000	102,000	102,000
[22]	Corpus Christi Garwood Water Rights	35,000	35,000	35,000	35,000
	Interruptible Agricultural Demand				
[23]	Garwood Irrigation Demand (Dry - 90th Percentile)	89,700	85,300	79,200	69,300
[24]	Gulf Coast Irrigation Demand (Dry - 90th Percentile)	147,400	113,400	103,900	88,600
[25]	Lakeside Irrigation Demand (Dry - 90th Percentile)	135,500	128,100	119,300	106,700
[26]	Pierce Ranch Irrigation Demand (Dry - 90th Percentile)	27,000	25,600	24,100	22,300
[27]	Total Interruptible Agricultural Demand, Rows 23+24+25+26:	399,600	352,400	326,500	286,900

Note: All other surface water demands in the water availability model are represented at full water right authorization levels.

AW Disaggregated Demand Model
PRELIMINARY MODEL RESULTS

DRAFT

Scope: Contains Summary of Diversions by Purpose, Pumpage by Treatment Plant, Sector and Subsector Total Consumption, and Non-Revenue Water.
 Instructions: None

	HISTORICAL					BASE YEAR
	2010	2012	2013	2014	2015	2013-2015
RAW WATER DIVERSIONS SUMMARY						
Total Source Water	155,001	160,502	152,932	145,639	144,007	147,526
Municipal	144,971	151,126	141,643	137,027	139,175	139,282
Decker Power Plant	2,751	3,325	2,903	2,418	846	2,056
Fayette Power Plant	7,036	5,435	7,798	5,767	3,621	5,728
Sand Hill Energy Center	4	0	0	0	0	0
Emma Long Park	5	7	6	6	7	7
Other Parks	234	375	384	415	355	385
Wholesale Imports	0	233	199	6	3	69

PRELIMINARY PROJECTIONS (SUBJECT TO CHANGE)			
2020	2040	2070	2115
172,352	231,909	341,583	568,528
153,843	212,706	322,019	548,216
9,000	9,000	9,000	9,000
9,000	9,000	9,000	9,000
0	500	500	500
7	10	15	26
425	588	890	1,514
76	105	160	272

PUMPAGE SUMMARY						
	2010	2012	2013	2014	2015	2013-2015
Total Pumpage	139,136	144,285	137,506	134,341	134,523	135,457
Davis WTP	67,682	62,876	69,404	61,548	53,473	61,475
Ullrich WTP	71,453	81,409	68,103	69,735	58,402	65,413
WTP4	0	0	0	3,058	22,648	8,569

149,764	207,066	313,480	533,679
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CONSUMPTION SUMMARY						
	2010	2012	2013	2014	2015	2013-2015
Single-Family	47,616	49,486	44,873	42,264	41,687	42,941
Indoor	30,882	31,649	32,153	31,251	30,344	31,249
Outdoor	16,734	17,836	12,720	11,013	11,343	11,692
% Outdoor	35%	36%	28%	26%	27%	27%
Multi-Family	30,866	30,780	30,167	29,604	30,131	29,967
Indoor	24,016	25,229	25,195	24,956	25,261	25,137
Outdoor	6,850	5,550	4,972	4,648	4,871	4,830
% Outdoor	22%	18%	16.5%	15.7%	16.2%	16.1%
Commercial	28,593	27,937	27,183	26,862	26,709	26,918
Total Indoor Consumption	18,496	18,750	18,583	18,800	18,738	18,707
Hospitals	2,806	2,529	2,470	2,475	2,464	2,470
Offices	3,707	3,821	3,795	3,829	3,819	3,814
Schools	2,672	2,479	2,402	2,380	2,412	2,398
Restaurants	2,152	2,295	2,280	2,240	2,261	2,260
Hospitality	3,090	3,401	3,537	3,619	3,659	3,605
Retail	2,175	2,505	2,453	2,530	2,577	2,520
Industrial	1,892	1,720	1,645	1,727	1,546	1,639
Outdoor	10,098	9,187	8,600	8,063	7,971	8,211
% Outdoor	35%	33%	32%	30%	30%	30%
Wholesale	9,125	9,515	8,415	8,187	7,742	8,115
Single-Family	6,488	6,746	5,864	5,708	5,315	5,629
Multi-Family	845	990	859	878	926	888
Commercial	1,792	1,779	1,691	1,602	1,501	1,598
Large Volume	8,223	10,209	10,100	9,504	10,437	10,014
City of Austin	4,179	2,397	2,269	2,154	1,980	2,134
Total Indoor Consumption	2,052	966	917	977	923	939
Austin Water	115	41	31	48	33	38
Austin Energy	1,201	463	473	461	480	471
Parks and Recreation	431	172	130	160	110	133
Other	304	290	282	308	300	297
Outdoor	2,127	1,431	1,352	1,177	1,057	1,195
% Outdoor	51%	60%	60%	55%	53%	56%
Fire Hydrants	246	413	549	507	390	482
Billed Unmetered	860	11	N/A	10	10	10
Fire Hydrant Use (% of Consumption)	0.19%	0.32%	0.4447%	0.4255%	0.3276%	0.3992%
Billed Unmetered Use (% of Consumption)	0.66%	0.01%	N/A	0.0086%	0.0083%	0.0084%
Indoor Sub-Total	92,793	96,318	95,363	93,675	93,445	94,161
Outdoor Sub-Total	36,915	34,428	28,193	25,417	25,642	26,417
Consumption Sub-Total	129,708	130,747	123,556	119,092	119,086	120,578

47,668	64,776	94,492	148,359
34,371	46,850	69,475	109,985
13,297	17,926	25,017	38,374
28%	28%	26%	26%
34,009	47,546	75,099	149,175
28,373	39,134	61,937	123,098
5,636	8,412	13,162	26,076
16.6%	17.7%	17.5%	17.5%
30,009	44,145	75,722	136,631
20,685	29,682	49,002	88,441
2,707	3,854	5,794	10,443
4,256	5,992	10,336	18,674
2,620	3,725	5,828	10,388
2,511	3,613	5,884	10,666
3,970	5,702	8,860	16,047
2,720	3,925	7,039	12,705
1,901	2,871	5,262	9,518
9,323	14,462	26,720	48,189
31%	33%	35%	35%
7,462	8,570	10,190	10,818
4,966	5,769	7,009	7,383
862	951	985	995
1,634	1,851	2,196	2,441
10,253	13,125	14,791	16,457
2,731	4,527	6,281	9,412
1,187	1,980	2,738	4,091
53	93	130	194
634	1,165	1,671	2,573
167	237	314	451
332	484	623	872
1,544	2,548	3,543	5,321
57%	56%	56%	57%
528	729	1,104	1,880
11	15	23	40
0.3992%	0.3992%	0.3992%	0.3992%
0.0084%	0.0084%	0.0084%	0.0084%
102,332	139,342	208,133	352,891
30,340	44,092	69,569	119,879
132,671	183,434	277,703	472,771

AW Disaggregated Demand Model
PRELIMINARY MODEL RESULTS

Scope: Contains Summary of Diversions by Purpose, Pumpage by Treatment Plant, Sector and Subsector Total Consumption, and Non-Revenue Water.
 Instructions: None

DRAFT

		HISTORICAL					BASE YEAR
		2010	2012	2013	2014	2015	2013-2015
System Loss		15,518	13,450		17,754	20,729	16,863
Miscellaneous		31,384	29,667	N/A	29,052	30,213	29,633
Process Water		15,865	16,217	15,426	11,298	9,485	12,070
Non-Revenue Water	UU	513	221	N/A	114	128	121
	RL	11,870	10,000	N/A	14,970	17,992	16,481
	UARL*	12	12	N/A	13	13	13
	AL	3,135	3,229	N/A	2,670	2,609	2,639
% Loss: Diversions -> Pumpage		4.03%	4.53%	2.92%	1.96%	3.34%	2.65%
% Loss: Pumpage -> Consumption		6.78%	9.38%	10.15%	11.35%	11.47%	11.41%
NRW (% of Pumpage)		11.15%	9.32%	N/A	13.22%	15.41%	14.31%
UU/NRW		3.30%	1.64%	N/A	0.64%	0.62%	0.63%
RL/NRW		76.49%	74.35%	N/A	84.32%	86.80%	85.56%
UARL/NRW		0.04%	0.04%	N/A	0.04%	0.04%	0.04%
AL/NRW		20.20%	24.01%	N/A	15.04%	12.59%	13.81%
Total Losses		16.32%	18.54%	19.21%	18.23%	17.31%	17.77%
Total Consumption		145,226	144,197	123,556	136,846	139,815	133,406
Population		875,936	907,161	928,026	951,329	977,491	952,282
Employment		546,025	577,366	593,036	608,707	624,378	608,707

PRELIMINARY PROJECTIONS (SUBJECT TO CHANGE)				
2020	2040	2070	2115	
17,092	23,632	35,777	60,909	
21,172	29,273	44,316	75,445	
4,079	5,640	8,539	14,537	
108	149	225	384	
14,624	20,219	30,611	52,113	
7	10	15	26	
2,361	3,264	4,942	8,413	
2.65%	2.65%	2.65%	2.65%	
11.41%	11.41%	11.41%	11.41%	
14.31%	14.31%	14.31%	14.31%	
0.63%	0.63%	0.63%	0.63%	
85.56%	85.56%	85.56%	85.56%	
0.04%	0.04%	0.04%	0.04%	
13.81%	13.81%	13.81%	13.81%	
23.02%	20.90%	18.70%	16.84%	
149,764	207,066	313,480	533,679	
1,101,632	1,577,760	2,314,769	3,977,380	
702,731	1,048,834	1,612,005	2,877,726	

AW Disaggregated Demand Model
PRELIMINARY MODEL RESULTS

DRAFT

Scope: Contains Summary of Diversions by Purpose, Pumpage by Treatment Plant, Sector and Subsector Total Consumption, and Non-Revenue Water.
 Instructions: None

	HISTORICAL					BASE YEAR	PRELIMINARY PROJECTIONS (SUBJECT TO CHANGE)				
	2010	2011	2012	2013	2014	2015	2013-2015	2020	2040	2070	2115
RAW WATER DIVERSIONS SUMMARY											
Total Source Water	50,507,267,202	52,299,625,098	49,833,146,493	47,456,747,463	46,924,917,701	46,924,917,701	48,071,603,885	56,160,997,730	75,567,872,451	111,305,219,817	185,255,498,001
Municipal	47,238,945,321	49,244,558,226	46,154,578,363	44,650,482,732	45,350,430,231	45,350,430,231	45,385,163,775	50,129,969,545	69,310,515,341	104,930,118,152	178,636,750,873
Decker Power Plant	896,416,101	1,083,454,575	945,883,541	787,777,378	275,702,531	275,702,531	669,787,817	2,932,659,000	2,932,659,000	2,932,659,000	2,932,659,000
Fayette Power Plant	2,292,687,636	1,771,000,185	2,540,888,343	1,879,182,717	1,179,808,716	1,179,808,716	1,866,626,592	2,932,659,000	2,932,659,000	2,932,659,000	2,932,659,000
Sand Hill Energy Center	1,303,404	0	0	0	0	0	0	0	162,925,500	162,925,500	162,925,500
Emma Long Park	1,583,000	2,346,000	2,097,177	2,076,648	2,281,283	2,281,283	2,151,703	2,376,653	3,285,999	4,974,719	8,469,137
Other Parks	76,331,740	122,324,465	124,965,488	135,351,988	115,814,940	115,814,940	125,377,472	138,485,098	191,471,760	289,871,664	493,487,791
Wholesale Imports	0	75,941,647	64,733,581	1,876,000	880,000	880,000	22,496,527	24,848,433	34,355,850	52,011,782	88,546,700
PUMPAGE SUMMARY											
Total Pumpage	45,337,537,000	47,015,326,000	44,806,616,000	43,775,225,000	43,834,370,000	43,834,370,000	44,138,737,000	48,800,715,195	67,472,666,548	102,147,774,231	173,899,990,002
Davis WTP	22,054,399,000	20,488,048,000	22,615,312,000	20,055,422,000	17,424,083,000	17,424,083,000	20,031,605,667	149,764	207,066	313,480	533,679
Ullrich WTP	23,283,138,000	26,527,278,000	22,191,304,000	22,723,191,000	19,030,364,000	19,030,364,000	21,314,953,000				
WTP4	0	0	0	996,612,000	7,379,923,000	7,379,923,000	2,792,178,333				
CONSUMPTION SUMMARY											
Single-Family	15,515,664,500	16,124,976,263	14,621,926,397	13,771,604,494	13,583,853,269	13,583,853,269	13,992,461,387	15,532,784,335	21,107,207,959	30,790,326,833	48,342,947,574
Indoor	10,062,801,703	10,313,002,945	10,477,065,087	10,183,094,279	9,887,596,230	9,887,596,230	10,182,585,199	11,199,784,677	15,266,131,559	22,638,655,112	35,838,795,337
Outdoor	5,452,862,797	5,811,973,318	4,144,861,310	3,588,510,215	3,696,257,039	3,696,257,039	3,809,876,188	4,332,999,658	5,841,076,399	8,151,671,721	12,504,152,237
% Outdoor	35%	36%	28%	26%	27%	27%	27%	28%	28%	26%	26%
Multi-Family	10,057,728,300	10,029,571,945	9,829,794,256	9,646,519,792	9,818,339,839	9,818,339,839	9,764,884,629	11,081,925,417	15,492,925,975	24,471,185,980	48,608,692,232
Indoor	7,825,683,700	8,220,957,149	8,209,770,691	8,132,094,595	8,231,180,380	8,231,180,380	8,191,015,222	9,245,417,160	12,751,986,205	20,182,289,595	40,111,740,139
Outdoor	2,232,044,600	1,808,614,796	1,620,023,565	1,514,425,197	1,587,159,459	1,587,159,459	1,573,869,407	1,836,508,257	2,740,939,770	4,288,896,385	8,496,952,093
% Outdoor	22%	18%	16.5%	15.7%	16.2%	16.2%	16.1%	16.6%	17.7%	17.5%	17.5%
Commercial	9,317,143,700	9,103,185,177	8,857,585,610	8,753,082,396	8,703,030,078	8,703,030,078	8,771,232,695	9,778,375,504	14,384,614,953	24,674,095,114	44,521,187,280
Total Indoor Consumption	6,026,794,334	6,109,627,220	6,055,224,189	6,125,869,790	6,105,709,353	6,105,709,353	6,095,601,110	6,740,367,394	9,672,032,761	15,967,356,997	28,818,626,847
Hospitals	914,462,993	824,233,609	804,992,926	806,345,494	802,971,473	802,971,473	804,769,965	882,187,143	1,255,803,066	1,887,934,222	3,402,918,218
Offices	1,207,839,939	1,244,999,508	1,236,674,365	1,247,840,616	1,244,353,278	1,244,353,278	1,242,956,086	1,386,929,005	1,952,496,853	3,367,921,861	6,085,065,146
Schools	870,836,521	807,764,967	782,716,414	775,414,736	785,885,272	785,885,272	781,338,807	853,777,649	1,213,902,167	1,899,062,279	3,384,983,476
Restaurants	701,332,179	747,680,252	742,806,623	730,024,419	736,662,973	736,662,973	736,498,005	818,313,710	1,177,201,160	1,917,197,750	3,475,390,188
Hospitality	1,006,954,521	1,108,188,489	1,152,563,162	1,179,134,985	1,192,381,200	1,192,381,200	1,174,693,116	1,293,540,192	1,858,104,361	2,886,920,228	5,228,880,520
Retail	708,877,737	816,243,973	799,375,317	824,522,813	839,623,927	839,623,927	821,174,019	886,200,421	1,279,030,648	2,293,723,223	4,139,891,877
Industrial	616,490,443	560,516,421	536,095,381	562,586,726	503,831,230	503,831,230	534,171,112	619,419,274	935,494,505	1,714,597,434	3,101,497,421
Outdoor	3,290,349,366	2,993,557,957	2,802,361,421	2,627,212,606	2,597,320,725	2,597,320,725	2,675,631,584	3,038,008,111	4,712,582,192	8,706,738,117	15,702,560,434
% Outdoor	35%	33%	32%	30%	30%	30%	30%	31%	33%	35%	35%
Wholesale	2,973,430,431	3,100,482,728	2,741,994,311	2,667,855,971	2,522,754,720	2,522,754,720	2,644,201,667	2,431,608,652	2,792,567,580	3,320,438,784	3,525,212,012
Single-Family	2,114,069,000	2,198,180,140	1,910,915,346	1,859,811,734	1,731,775,686	1,731,775,686	1,834,167,589	1,618,251,571	1,879,724,767	2,283,924,597	2,405,667,116
Multi-Family	275,295,366	322,753,509	280,033,148	289,026,325	301,827,035	301,827,035	289,505,503	280,916,780	309,801,347	320,992,647	324,283,148
Commercial	584,066,065	579,549,079	551,045,817	522,017,913	489,151,998	489,151,998	520,738,576	532,440,301	603,041,466	715,521,540	795,261,748
Large Volume	2,679,335,900	3,326,677,512	3,291,153,755	3,096,786,817	3,400,995,046	3,400,995,046	3,262,978,539	3,341,038,563	4,276,763,077	4,819,649,251	5,362,535,424
City of Austin	1,361,749,500	780,983,354	739,424,351	701,992,777	645,115,200	645,115,200	695,510,776	889,847,215	1,475,268,737	2,046,582,280	3,066,785,037
Total Indoor Consumption	668,505,000	314,637,169	298,821,074	318,352,716	300,797,642	300,797,642	305,990,477	386,639,926	645,133,551	892,093,858	1,333,094,407
Austin Water	37,564,000	13,365,704	10,200,469	15,749,284	10,860,882	10,860,882	12,270,212	17,263,763	30,408,390	42,220,095	63,312,426
Austin Energy	391,473,900	150,793,097	154,180,462	150,215,412	156,261,567	156,261,567	153,552,480	206,700,267	379,753,291	544,459,307	838,577,191
Parks and Recreation	140,424,200	56,013,366	42,402,061	51,977,006	35,794,955	35,794,955	43,391,341	54,523,456	77,259,118	102,307,121	147,035,698
Other	99,042,900	94,465,002	92,038,082	100,411,014	97,880,238	97,880,238	96,776,445	108,152,439	157,712,752	203,107,335	284,169,092
Outdoor	693,244,500	466,346,185	440,603,277	383,640,061	344,317,558	344,317,558	389,520,299	503,207,289	830,135,186	1,154,488,422	1,733,690,630
% Outdoor	51%	60%	60%	55%	53%	53%	56%	57%	56%	56%	57%
Fire Hydrants	80,129,900	134,514,237	179,023,712	165,121,719	127,106,859	127,106,859	157,084,097	171,894,963	237,664,786	359,803,905	612,542,917
Billed Unmetered	280,295,968	3,550,919	N/A	3,339,880	3,211,226	3,211,226	3,275,553	3,634,312	5,024,859	7,607,202	12,950,769
Fire Hydrant Use (% of Consumption)	0.19%	0.32%	0.4447%	0.4255%	0.3276%	0.3276%	0.3992%	0.3992%	0.3992%	0.3992%	0.3992%
Billed Unmetered Use (% of Consumption)	0.66%	0.01%	N/A	0.0086%	0.0083%	0.0083%	0.0084%	0.0084%	0.0084%	0.0084%	0.0084%
Indoor Sub-Total	30,236,551,068	31,385,384,723	31,074,029,106	30,524,054,168	30,449,033,371	30,449,033,371	30,682,372,215	33,344,856,371	45,404,614,733	67,820,483,597	114,990,004,165
Outdoor Sub-Total	12,028,927,131	11,218,557,412	9,186,873,285	8,282,249,678	8,355,372,866	8,355,372,866	8,608,165,276	9,886,252,590	14,367,423,193	22,669,205,752	39,062,849,080
Consumption Sub-Total	42,265,478,199	42,603,942,135	40,260,902,391	38,806,303,846	38,804,406,237	38,804,406,237	39,290,537,491	43,231,108,962	59,772,037,926	90,489,689,348	154,052,853,245
Acre-Ft	129,708	130,747	123,556	119,092	119,086	119,086	120,578	132,671	183,434	277,703	472,771

AW Disaggregated Demand Model
PRELIMINARY MODEL RESULTS

DRAFT

Scope: Contains Summary of Diversions by Purpose, Pumpage by Treatment Plant, Sector and Subsector Total Consumption, and Non-Revenue Water.
 Instructions: None

		HISTORICAL					BASE YEAR	PRELIMINARY PROJECTIONS (SUBJECT TO CHANGE)				
		2010	2011	2012	2013	2014	2015	2013-2015	2020	2040	2070	2115
System Loss		5,056,633,850		4,382,752,155		5,785,169,685	6,754,519,436	5,494,768,782	5,569,606,233	7,700,628,622	11,658,084,883	19,847,136,757
Miscellaneous		10,226,364,052		9,667,051,253	N/A	9,466,692,148	9,845,067,137	9,655,879,642	6,898,860,584	9,538,477,415	14,440,428,804	24,583,897,628
Process Water		5,169,730,202		5,284,299,098	5,026,530,493	3,681,522,463	3,090,547,701	3,932,866,885	1,329,254,350	1,837,848,793	2,782,343,921	4,736,760,871
Non-Revenue Water	UU	167,086,619		72,076,765	N/A	37,225,956	41,595,245	39,410,601	35,068,627	48,486,457	73,404,297	124,966,077
	RL	3,867,859,439		3,258,511,274	N/A	4,878,015,126	5,862,768,723	5,370,391,925	4,765,272,308	6,588,543,389	9,974,484,144	16,980,915,208
	UARL*	3,970,928		4,019,017	N/A	4,116,792	4,136,081	4,126,436	2,380,974	3,291,974	4,983,763	8,484,535
	AL	1,021,687,792		1,052,164,116	N/A	869,928,603	850,155,468	860,042,036	769,265,298	1,063,598,776	1,610,196,442	2,741,255,473
% Loss: Diversions -> Pumpage		4.03%		4.53%	2.92%	1.96%	3.34%	2.65%	2.65%	2.65%	2.65%	2.65%
% Loss: Pumpage -> Consumption		6.78%		9.38%	10.15%	11.35%	11.47%	11.41%	11.41%	11.41%	11.41%	11.41%
NRW (% of Pumpage)		11.15%		9.32%	N/A	13.22%	15.41%	14.31%	14.31%	14.31%	14.31%	14.31%
UU/NRW		3.30%		1.64%	N/A	0.64%	0.62%	0.63%	0.63%	0.63%	0.63%	0.63%
RL/NRW		76.49%		74.35%	N/A	84.32%	86.80%	85.56%	85.56%	85.56%	85.56%	85.56%
UARL/NRW		0.04%		0.04%	N/A	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%
AL/NRW		20.20%		24.01%	N/A	15.04%	12.59%	13.81%	13.81%	13.81%	13.81%	13.81%
Total Losses		16.32%		18.54%	19.21%	18.23%	17.31%	17.77%	23.02%	20.90%	18.70%	16.84%
Total Consumption		47,322,112,049		46,986,694,290	40,260,902,391	44,591,473,531	45,558,925,673	43,470,433,865	48,800,715,195	67,472,666,548	102,147,774,231	173,899,990,002
Acre-Ft		145,226		144,197	123,556	136,846	139,815	133,406	149,764	207,066	313,480	533,679
Population		875,936		907,161	928,026	951,329	977,491	952,282	1,101,632	1,577,760	2,314,769	3,977,380
Employment		546,025		577,366	593,036	608,707	624,378	608,707	702,731	1,048,834	1,612,005	2,877,726

AW Draft List of 25 Demand Management Options

Options on this list have been identified as having potential for substantial water savings and were developed based on input from the Water Forward Task Force, other previous Task Force efforts, the Water Conservation Study (Maddaus 2015), other conservation studies, and Austin Water staff and the consulting team. The next step of the process is to conduct a qualitative-based screening process to identify the top 10 options for characterization. The characterization process for the top 10 options will include development of quantified water savings estimates.

Water Loss Control – utility side		
a. Enhance current water loss control programs	Austin Water currently implements utility-side water loss control programs (including leak detection, main break response, and water main replacements) and anticipates that additional savings could be achieved with program enhancements.	Sector: System wide End Use: Nonrevenue Water
Automated Metering Infrastructure (AMI)		
b. Implement customer-facing programs that provide real-time water use information, including identification of customer-side leaks and other water-saving opportunities	Austin Water is currently conducting an AMI pilot program to test “smart meters” that electronically transmit water usage data, rather than being visually read by a meter reader. The pilot testing includes an interface portal that provides water use information to customers. Smart meters offer more timely data to encourage conservation and allow customers and the utility to monitor water use, including the ability to quickly identify water loss sooner and reduce the risk of meter-read inaccuracies. Preliminary project planning is underway for full-scale implementation using a phased approach.	Sector: All End Use: All
Landscape Transformation Ordinances and Incentives		
c. Implement turf grass area, irrigated area, and/or irrigation system limitations	In May 2016, the City Council adopted a permanent one day per week watering schedule for automatic irrigation systems. Through landscape transformation ordinances and incentives, the focus would be to reduce irrigated	Sector: Single Family, Multifamily, Commercial, potentially others End Use: Irrigation

	<p>areas for new development and to assist customers in complying with the watering schedule and maintaining landscapes appropriate to this region.</p> <p>Larger rebate amounts may increase participation in this program. Updated cost benefit information may be required for implementation.</p> <p>Commercial incentives implementation would include additional coordination with Watershed Protection on stormwater runoff controls.</p>	
d. Increase WaterWise landscape rebates for residential and multifamily		Sector: Single Family, Multifamily End Use: Irrigation
e. Implement a new WaterWise landscape rebate for commercial		Sector: Commercial End Use: Irrigation
Alternative Water ordinances and incentives (for rainwater, graywater, ac condensate)		
f. Incentivize and/or require on-site alternative water use for new developments	This strategy aligns with Watershed Protection’s beneficial reuse of stormwater efforts. Potential onsite non-potable water savings for new development may depend on implementation approach and external drivers. Implementation may be facilitated by a balanced range of incentives and requirements.	Sector: All (new development) End Use: Non-potable indoor, irrigation
g. Modify current rainwater harvesting rebate to encourage larger scale commercial systems	Increasing the \$5,000 cap per site may encourage larger commercial systems.	Sector: Commercial End Use: Non-potable indoor, irrigation
h. Offer an incentive to encourage the installation and use of graywater systems	This option would be a follow-up to the work done by the Graywater Workgroup that identified impediments to implementation of graywater systems. Council approved code amendments in Fall 2014 to remove impediments to installation of these types of systems while still protecting public health and safety.	Sector: All End Use: Non-potable indoor, irrigation
i. Explore innovative building and plumbing requirements (such as dual plumbing) to expand non-potable use of alternative water sources	Focus on dual plumbing could expand non-potable end uses (such as toilet flushing) that can be provided by alternative water sources.	Sector: Single family, Multifamily, Commercial, potentially others End Use: Non-potable indoor, irrigation

Irrigation efficiency ordinances and incentives		
j. Expand current rebate program for smart controllers responsive to leaks, high pressure, soil moisture, and rain	In May 2016, the City Council adopted a permanent one day per week watering schedule for automatic irrigation systems. The focus would be to assist customers in complying with the watering schedule and maintaining landscapes in a water efficient manner.	Sector: Single family, Multifamily, Commercial, potentially others End Use: Irrigation
k. Incentivize retrofit of grandfathered spray irrigation systems to encourage more efficient irrigation systems		Sector: Single family, Multifamily, Commercial, potentially others End Use: Irrigation
l. Explore opportunities to eliminate the requirement for permanent automatic irrigation system installation for new commercial development		Advancement of this option would include additional coordination with Watershed Protection. Sector: Multifamily, Commercial, potentially others End Use: Irrigation
Water Rates and Fees		
m. Continue to explore opportunities to use Austin’s fee and rate structures to reduce water use while maintaining affordability	Over the long term and in alignment with Imagine Austin, continue to explore ways to achieve additional water savings through Austin’s fee and rate structures.	Sector: All End Use: All
Development-focused water use estimates and benchmarking		
n. Require large building owners to report and benchmark their water use annually	This option would extend the current energy use and reporting program (ECAD – Energy Conservation Audit Disclosure) to water use in helping identify and achieve potential water savings.	Sector: Multifamily, Commercial, potentially others End Use: All
o. Require pre-development water use estimate submittal for new development, to be reviewed by City staff for comparison to benchmarks. As part of this review, City staff will provide potential water use efficiency recommendations and information on available incentive and rebate programs.	A similar process currently exists in the Austin Energy Green Building Program, which applies to new commercial, multifamily, and residential development in certain designated areas of the city. This option would apply city-wide to new development and would focus on water use estimates and opportunities for efficiency.	Sector: Single family, Multifamily, Commercial, potentially others End Use: All

Commercial, Industrial, and Institutional (CII) and non-residential ordinances and incentives		
p. Require AC condensate recovery systems for new commercial and multifamily	These options represent conservation best practices.	Sector: Multifamily, Commercial, potentially others End Use: Non-Potable Indoor, Irrigation
q. Require older cooling towers to meet water efficiency standards and use efficient equipment		Sector: Commercial, potentially others End Use: HVAC (cooling)
r. Require steam boiler and other water efficiency standards and equipment		Sector: Commercial, potentially others End Use: HVAC and other large equipment
s. Require sellers of commercial property to provide written disclosure of non-compliant water using equipment or fixtures at point of sale to buyers and City staff	This option would extend the current energy use, reporting, and disclosure program (ECAD – Energy Conservation Audit Disclosure) to water use and would help identify and achieve potential water savings.	Sector: Multifamily, Commercial, potentially others End Use: All
t. Require and/or incentivize swimming pool water use efficiency	This option would explore opportunities for implementing municipal and commercial swimming pool water use efficiency.	Sector: Multifamily, Commercial, potentially others End Use: Pools
Plumbing codes and ordinances and fixture incentives		
u. Require or incentivize EPA Energy Star and/or WaterSense labeled residential and commercial fixtures and equipment	These options represent conservation best practices. These options would be in addition to existing requirements at the state level.	Sector: All End Use: All
v. Incentivize or require toilet, urinal, and bathroom faucet aerator efficiencies.		Sector: All End Use: All
Reclaimed water ordinances and incentives (centralized purple pipe system)		
w. Expand current reclaimed system connection requirements or incentives for existing commercial cooling tower, outdoor irrigation, and other non-potable uses	These additional connection requirements or incentives will be considered separately from expansion of the reclaimed water distribution system (to be considered as part of the supply side options list).	Sector: Multifamily, Commercial, potentially others End Use: Non-potable indoor, irrigation

Customer education and outreach programs		
x. Enhance customer engagement outreach and education programs	These options would enhance efforts on customer outreach and education.	Sector: All End Use: All
y. Continue to enhance web-site and social media programs targeting customer water use efficiency		Sector: All End Use: All